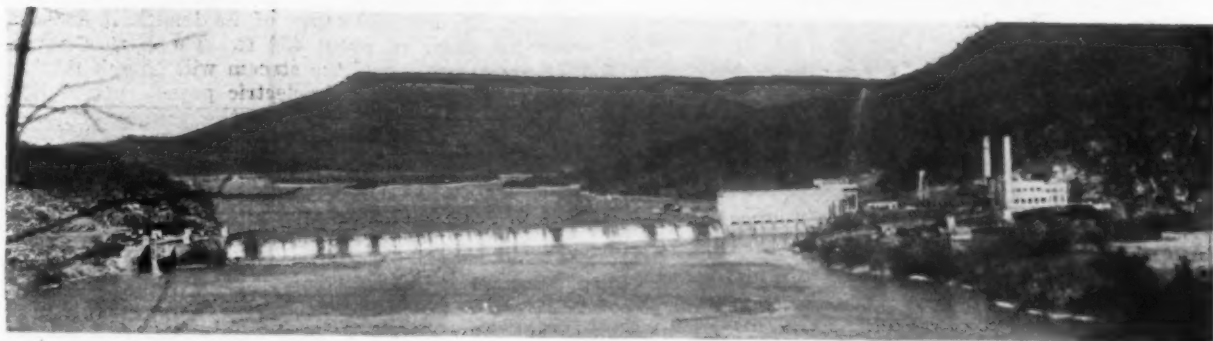


# THE IRON AGE

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## Power Is Spur to Southern Industry

Hydroelectric Plants Stimulate Manufacturing—Chattanooga, a Center of Diversified Production, Shows Rapid Growth in Metal-Working Lines

BY GILBERT L. LACHER

THE South industrialized! That is the vision which is unfolding as advantages in power, raw materials, labor, climate and markets make themselves felt. The steady progress of the Birmingham district as an iron and steel producing center has furnished convincing proof of what Southern enterprise can accomplish in the basic industries. The South is also forging ahead in the manufacture of finished products and its development in that direction, accelerated by the exploitation of great resources in water power, promises to be spectacular.

The hydroelectric plant at Muscle Shoals, because of its inception as a war-time project, has attracted attention widely to the Tennessee River as a source of power. This stream, rising in an area of abundant rainfall high in the mountains and plateaus of the Appalachian Range, almost bisects that part of the South lying east of the Mississippi River. The harnessing of its waters to generate electricity is still in its early stages, but what has been done thus far has

proved so stimulating to industry that the further possibilities fairly capture the imagination.

### Large Hydroelectric Plants Now in Service

In 1913 the Hales Bar Dam was built 30 miles down the Tennessee River from Chattanooga. At that point is a hydroelectric plant with 54,240 installed hp. Two other developments on the Ocoee River, a tributary of the Tennessee River, have a total of 54,270 installed hp. These, together with a plant at Great Falls on the Caney Fork River, a branch of the Cumberland River, are under one management and have a combined installed horsepower of 144,020. The Aluminum Co. of America has a plant with 96,000 installed hp. at Cheoah Dam on the Little Tennessee River, a tributary of the Tennessee River, the power rights of which it controls above its present generating station. Taking into account a number of smaller developments in the upper Tennessee River and the plant at Muscle



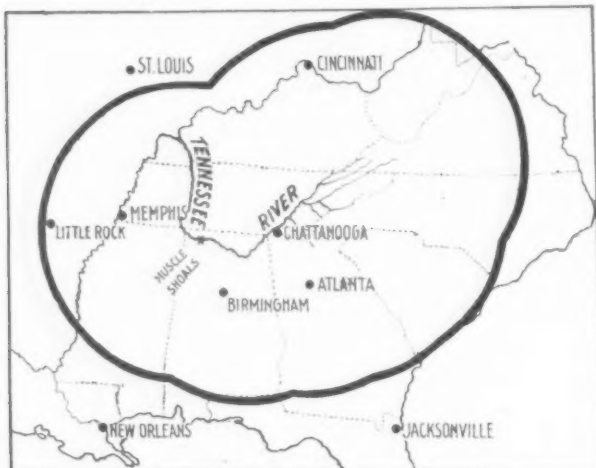
Moccasin Bend of the Tennessee River, With Chattanooga Shown Lying at the Right. (Above) Hales Bar Dam and Hydroelectric Plant, 30 Miles From Chattanooga

Shoals, there is a total of over 526,000 installed hydroelectric hp. on that stream.

#### Bids are In on Upper Tennessee Power Development

Inspired by the current power-navigation survey of the upper Tennessee River and two of its important tributaries, the Clinch and Powell Rivers, private power interests believe that a total of 592,500 installed hp. may be added to that which is now available. This survey, which has been in progress for several years, is under the direction of Major Harold C. Fiske, district engineer, Corps of Engineers, United States Army, Chattanooga. The plan outlined calls for the erection of 11 dams and a storage reservoir with an estimated available capacity of 2,000,000 acre ft., or about 650,000,000 gal.

This extraordinarily large storage will permit holding back the water during the periods of heavy rainfall



*The Heavy Line Circumscribes the Area Which, It Is Estimated, Can Be Economically Served by Tennessee River Hydroelectric Plants*

and stabilizing the flow of the river during the low water season. For that reason it will have an important influence on all hydroelectric developments on the lower courses of the river. The sharp variation in the flow of the river between periods of high and low water greatly reduces the primary power available at all of the power dams. The primary power, i.e., the power which can be generated when there is a minimum flow of water in the river, is only 125,000 hp. at Muscle Shoals, as compared with 260,000 installed hp.

#### Storage Will Double Primary Power at Dams

It is estimated that the Cove Creek storage, contemplated in the Government plan, will double the primary power at Muscle Shoals. It will no doubt have a similar effect on other power stations on the river. The survey, therefore, was of great importance not only because it uncovered new dam sites for hydroelectric plants, but also because it provides for the conservation of water now lost in flood seasons, thereby materially increasing the effective capacity of power stations on the river.

The power possibilities of the upper Tennessee River basin are no idle dream, but promise to be developed within the next few years. Pursuant to the Federal Power Act, hearings were held by Major Fiske at Chattanooga last December and bids were submitted on the construction of the 11 dams contemplated. These tenders have been referred to the Chief of Engineers, United States Army, Washington, who will submit them to the Federal Power Commission. The acceptance of a tender will give the bidder a period of three years to make a survey of the project and to prepare complete plans up to the point of actual construction work. If the plans are then approved by the commission, the bidder will be given a license to build the dams. The power rights will be granted for only 50 years, after which they revert to the Government.

The entire cost of dam and plant construction must be borne by the licensee. It is also provided that the dams shall be constructed with locks to permit navigation.

The project, just outlined, does not exhaust the possibilities of harnessing the headwaters of the Tennessee River. In fact, it is estimated that again as much power can be developed on other tributaries, surveys of which have been begun. The development of these other branches would obviously make the control of the river flow even more complete.

The Tennessee River is particularly well adapted to exploitation for power purposes because of its sharp fall. In the first 430 miles of its length it drops a vertical distance of about 430 ft. The harnessing of these upper reaches of the stream will have a marked effect on the cost of hydroelectric power. At present there are sharp fluctuations in the volume of water flow; at Muscle Shoals during flood stages the quantity of water passing is 40 times, or more, greater than the flow at low-water periods. This has made it necessary to supplement hydroelectric plants with standby steam stations. Fortunately the region is well supplied with cheap coal, but even so the generation of power by steam adds to the cost.

#### Tennessee Basin Will Produce Double the Power from Niagara

Engineers who have studied the subject estimate that the Tennessee River can produce from 2,000,000 to 4,000,000 hp., depending on the variation in water flow, or more than double that which can properly be obtained from Niagara. Inasmuch as the Tennessee River power plants will be distributed over several hundred miles of its length, the territory which they can serve will be larger. The approximate economic limits of direct transmission from plants in the Tennessee River basin, as estimated by Major Fiske, will inclose most of the South east of the Mississippi River exclusive of Florida, as well as portions of Arkansas, Missouri, Illinois, Indiana and Ohio.

#### Cheap Power Draws Textile Industry to South

Will there be a market for this power if it is harnessed? The best answer to this question is that the South, containing one-third of the population of the United States, makes only one-sixth of the manufactured goods. A large producer of raw materials, the South has been shipping them to distant points from which they return in the form of finished products for the ultimate consumer.

The economic loss in transportation has been in no case more striking than with cotton, in the output of which the South leads the world. Formerly the hot, dry summer so essential to the growth of cotton was regarded as a disadvantage from a manufacturing standpoint. Humidifying processes and ventilating, cooling and filtering systems have now been developed, however, and textile mills are being operated in the South without encountering technical difficulties. The warm climate now is considered an asset because it means lower living costs. With less fuel consumed, less clothing required and less expensive houses needed, mill employees live more cheaply than in colder climes. There is, moreover, a good supply of labor in the rugged white colonial stock which inhabits the Southern highlands. These factors, together with cheap power, have been and are drawing the textile industry southward. In 1911 there were 11,746,379 spindles in the South; today there are 17,720,305.

The growth of other industries is also accelerating. Chattanooga, a community of over 100,000 people almost in the center of that part of the South east of the Mississippi River and close to hydroelectric plants, both completed and projected, on the Tennessee River, is highly diversified in its industrial development. It has 381 factories, making 1328 different kinds of products. The leading industry in terms of capital invested is textile manufacture, with 50 mills and a total capitalization of \$25,000,000. Chattanooga is the leading cotton mercerizing center in the South

and is second in the country in the production of hosiery.

#### Metal Industry Largest Power Consumer in Chattanooga

Ranking close to textile manufacture is the metal-working industry. In fact, if considered in all its ramifications, this industry represents an investment nearly equal to that of the textile industry, if not larger. Certainly the metal-working industry leads in the consumption of electric power. In 1925 the Tennessee Electric Power Co. furnished 66,926,533 kwhr. to metal-working plants, or 45 per cent of its total output for power purposes. To the textile mills it supplied 18,806,293 kwhr., or 12½ per cent of the total. The largest individual consumer of power in Chattanooga is the Southern Ferro Alloys Co., which manufactures 50 per cent ferrosilicon, using 120,000

Tennessee has long been an important pig iron producing center. In the eastern half of the State are deposits of red iron ore, estimated by the United States Geological Survey at 600,000,000 tons, with brown ore estimated at 225,000,000 tons. In that section also are large beds of bituminous coal, estimated at 25,500,000,000 tons. The coal lends itself to coking. In fact, Chattanooga has a large modern by-product plant.

#### Industry Highly Diversified in Chattanooga

These great resources will no doubt be more largely exploited in coming years, but at present development in the Chattanooga area is more rapid in finished lines of manufacture than in the basic industries. The city ranks second in the United States as a producer of high-pressure steam boilers. It is a leading manufacturer and exporter of oil well drilling machinery. It is an important producer of cast iron pressure pipe



*Hydroelectric Plants, Completed and Proposed, in Tennessee River Basin. The solid circles indicate the existing dams and the outline circles those embraced in present plans*

to 125,000 kwhr. per 24-hr. day in its electric furnaces.

The foundry industry is also an important user. There are 26 companies in the city operating foundries. The investment in foundries since 1910 has increased six and one-half times, now being slightly more than \$19,000,000. In Chattanooga is the only malleable foundry equipped with air furnaces in the South. It also has an electric steel foundry which is one of very few, if it is not the only one in the country, electrically equipped in all departments, including core and mold-drying and annealing.

#### Sinter from Copper Mines Reduces Phosphorus in Pig Iron

The pig iron and scrap consumption of Chattanooga, as measured by the tonnage bought, amounts to 363,000 tons annually. Pig iron, with the exception of the malleable grade, which must be brought in from the North, is purchased from Tennessee or Alabama furnaces. The freight rates on pig iron are \$1.02 per gross ton from Lafollette, Tenn., Birmingham and Sheffield, Ala., and 62c. from Rockwood, Tenn. The Rockwood furnaces, which are the closest going stacks, heretofore have made high phosphorus pig iron, which is not suitable for much of the work done in Chattanooga foundries. Recently, however, the Tennessee Copper Co., Copper Hill, Tenn., has installed a sintering plant to recover iron oxide which was formerly discarded as refuse in its copper smelting operations. This sinter is now being added to the ore burden of the Rockwood stacks and, being low in phosphorus, is reducing the phosphorus content in the pig iron from 1.20 to 0.80 per cent.

and has four plants making cast iron soil pipe. It stands first in the South in the manufacture of bath tubs and enamelware. In this connection it is to be noted that cast iron bath tubs, sinks and wash bowls are enameled with porcelain in electric furnaces. At another important plant, stamped and pressed sheet metal products and castings are enameled for a variety of uses.

Chattanooga also occupies a leading position in the South in the manufacture of plows, saw mill machinery, gas ranges, shovels, refrigerators, sewer pipe and undertaking goods. It stands second in the South and fourth in the country in furniture manufacture. It is the second hardwood lumber market in the South and holds second place also in the tanning of leather. It is third in the South in cement manufacture. It is an important producer of wood pulp.

A number of large industries have established plants in Chattanooga within the past few years, among them the Crane Co., Chicago, the International Harvester Co., Chicago, and the Somerville Iron Works, Somerville, N. J. The United States Cast Iron Pipe & Foundry Co., which has two plants in Chattanooga, plans to construct a large new foundry on a 37-acre tract adjoining one of its present properties.

#### Great Increase in Power Consumption by City's Industries

The rapid growth of Chattanooga's industries is indicated by the increase in power consumption. In 1915 the Tennessee Electric Power Co. furnished 11,577,576 kwhr. for power purposes to Chattanooga industries; in 1925 it supplied 147,322,398 kwhr. In



1915 possibly again as much power as was supplied by the public service company was produced by individual factory power plants. Ten years later more than 90 per cent of the power requirements of industry was furnished by the public utility. It may be conservatively stated, therefore, that the power consumption by Chattanooga manufacturers has increased seven-fold in the 10 years.

In the vicinity of Chattanooga are large operations in the non-ferrous metals industry. At Maryville, Tenn., the Aluminum Co. of America uses electricity generated at the Cheoah Dam, previously referred to, to convert Tennessee bauxite into aluminum ingots. In the Ducktown basin in southeastern Tennessee, are the largest copper mines east of Michigan. Zinc mines are located in eastern Tennessee and the State ranks second to New Jersey in zinc output east of the Mississippi River.

At Knoxville, Tenn., is a rolling mill with an annual capacity of 50,000 tons of iron and steel merchant bars, concrete bars, and light structural shapes.

#### Chattanooga an Important Steel Jobbing Center

From the standpoint of markets, Chattanooga is centrally located in the South and has excellent transportation facilities. It is served by five railroad companies with a total of nine trunk lines which radiate from the city like spokes from the hub of a wheel. Within a radius of 60 miles is a population of over 500,000; in a radius of 200 miles are 6,500,000 people; in a radius of 300 miles, 15,500,000. Both because of its central location and the diversified character of its manufactures, Chattanooga is an important jobbing center. In the warehousing and distribution of finished rolled steel and iron it holds a leading position in the South.

There are three principal jobbers of iron and steel in the city and a number of smaller ones, who, however, confine themselves mainly to heavy hardware lines. Chattanooga warehouses distribute steel throughout that section of the South east of the Mississippi River and south of the northern boundaries of Tennessee and North Carolina. Nashville, Tenn., is approximately the breaking point in freight rates between Chattanooga and Cincinnati jobbers. In Louisiana, competition from New Orleans jobbers is encountered and in Alabama, Birmingham distributors must be reckoned with. Foreign competition has not been severe except in Florida, where local jobbers have bought considerable quantities of European steel, principally bars. The annual distribution of finished iron and steel through Chattanooga warehouses ranges from 40,000 to 50,000 tons. Chattanooga itself, because of marked development in secondary lines of manufacture, is one of the best Southern markets not only for warehouse steel but also for large tonnages direct from the mills. The carload freight rates on finished steel to Chattanooga from various mill points are as follows:

From Knoxville, Tenn., 11½c. per 100 lb.; from Alabama City, Ala., 11½c.; from Birmingham, 14c.;

from Atlanta, Ga., 17c.; from Chicago, 49c.; from Pittsburgh, 50c.

#### Power Developments Have Improved River Navigation

Chattanooga is also favorably located for river transportation. Before the Government undertook the construction of Wilson Dam at Muscle Shoals, a line of boats was operated from Chattanooga to Joppa, Brookport and Metropolis, Ill. Because of low water during the summer, this service was interrupted for about five months each year. Muscle Shoals was always a difficult section of the river to navigate. The completion of Wilson Dam, however, has overcome 100 ft. out of 150 ft. in the fall in that section of the stream, and the construction of Dam No. 3 at Muscle Shoals will overcome the remaining 50 ft.

Recently navigation has been resumed on the river, but for about five miles above the shoals barges must pass through an old Government canal. What was formerly an almost insurmountable obstruction to navigation was encountered in a stretch of 25 miles just below Chattanooga. This was wholly removed by the construction of the Hales Bar Dam. Even with the remaining difficult 5 miles above Muscle Shoals, shipments of bulk freight are again moving to and from Chattanooga. The Tennessee River is peculiarly well suited to navigation both because it is free from ice the year 'round and because it carries an unusually large volume of water. A minimum flow of 6000 cu. ft. at Chattanooga compares with a minimum volume of only 2500 cu. ft. in the Ohio River at Cincinnati.

Future possibilities for the development of the river for navigation are regarded as exceptionally bright. The construction of the 11 dams above Chattanooga and dams at Widow's Bar, Gunter'sville and Riverton, Ala., together with the completion of Dam No. 3 at Muscle Shoals, is expected to insure a 9-ft. stream all year from Chattanooga to Riverton.

#### Short Cut by River to the Gulf in Prospect

Certain power interests have already applied for a license to construct the dam below Riverton. This is of especial interest because it promises to aid in giving cities on the Tennessee River a short cut to the Gulf of Mexico. The Riverton dam will back up water in Bear Creek, overcoming one-half of the lift to get over the divide to the Tombigbee River, flowing into Mobile Bay. Applications which have been filed for dams on the latter river may result in overcoming the remainder of the lift. The distance from Chattanooga to New Orleans via the Tennessee-Ohio-Mississippi route is 1477 miles. From Chattanooga to Mobile by the proposed Bear Creek cut-off would be 829 miles, a saving of 648 miles.

Aside from the navigation advantages of the proposed river dams, flood control will also be subserved. The 11-dam project on the upper Tennessee River would not entirely prevent floods, inasmuch as it does not embrace all parts of the basin, but it is believed that it would greatly reduce fluctuations in the volume of water flow.

## SLAG FOR CONCRETE

### Specifications of Engineers' Society of Western Pennsylvania

Slag for use as an aggregate, so-called, for concrete has been defined in the specifications adopted by the Engineers' Society of Western Pennsylvania as given in the subjoined. The specifications have been printed in folder form and a copy may undoubtedly be had by addressing the society at the William Penn Hotel, Pittsburgh. The following extract is taken from the specifications:

Slag shall consist of air-cooled blast-furnace slag of tough, durable pieces, non-glassy in character. Dried slag, when tested according to the methods of the American Society for Testing Materials, Serial Desig-

nation C 29-21, shall weigh not less than 70 lb. per cu. ft.

Coarse aggregates shall be divided into three classes, and when tested dry with Tyler standard sieves, the per cent retained on sieves shall be within the following limits, by weight:

Small, suitable for reinforced concrete or concrete in thin walls or small volumes	
On a ¾-in. sieve.....	0 to 5
On a ¾-in. sieve.....	30 to 70
On a No. 4 sieve.....	95 to 100
Medium, suitable for mass or reinforced concrete	
On a 1½-in. sieve.....	0 to 5
On a ¾-in. sieve.....	30 to 60
On a ¾-in. sieve.....	85 to 100
Large, suitable for mass concrete	
On a 2½-in. sieve.....	0 to 5
On a 1½-in. sieve.....	15 to 40
On a ¾-in. sieve.....	25 to 75
On a ¾-in. sieve.....	85 to 100



# Will Hold Machine Tool Show

## Machine Tool Builders Vote for Independent Exhibition—Providence Meeting Also Starts Afresh on Standardization and Hears New Pricing Basis

**A**N independent machine tool exhibition will be staged at Cleveland in the fall of 1927, possibly as an annual institution. By a substantially unanimous and enthusiastic vote, the National Machine Tool Builders' Association so decided at its meeting Thursday and Friday, May 6 and 7, at Providence, R. I. Thus has apparently been added another to the string of shows held in this country in connection with trade and technical meetings, but the resolution was adopted as leading the way toward reducing the number of shows which machine tool makers need to patronize and at the same time providing a single, comprehensive exposition for the metal working industry considered in its broadest terms. By assuming responsibility, the association will expect to turn into its treasury, for furtherance of activities in research, for example, such profits as may accrue over the expenses of the exposition.

A fresh approach to standardization as an association activity was acceptably considered by the meeting. Failures to get very far in earlier efforts in the same direction were touched on, and the new committee to be appointed must be made up, it was emphasized, of representatives already charged with internal plant standardization jobs, and these committee members must have the backing of company executives, so joint conferences will be possible. They must focus on a few rather than many matters and they must not consider, for the present at least, questions of a controversial nature.

Among addresses made to the convention was one on pricing and profits by W. L. Churchill, whose contribution recently in *THE IRON AGE* aroused wide interest and admittedly served to add to the authenticity and acceptability of his contentions relating to the proper basis of figuring for profits and his assertion that earnings should amount to 100 per cent of the manufacturing cost exclusive of the cost of the materials.

## Deciding on the Independent Exposition

**T**HE decision of the association to hold a machine tool exhibition of its own was substantially unanimous, the one member who voted in the negative promptly stating that he would support the enterprise. The investigation of the association's going into an exhibition was in the hands of an exposition committee headed by J. Wallace Carrel, Lodge & Shipley Machine Tool Co., Cincinnati, chairman. The other members of the committee, which was asked to continue as the committee on the exhibition, are as follows: P. E. Bliss, Warner & Swasey Co., Cleveland; H. W. Dunbar, Norton Co., Worcester; O. B. Iles, International Machine Tool Co., Indianapolis; E. J. Kearney, Kearney & Trecker Corporation, Milwaukee.

The committee report showed that it had gone into the question of finances carefully and had also made overtures by which it might have a special working arrangement with such an association as the American Society for Steel Treating. A proposal, for example, that the machine tool builders engage for a large block of space to be resold by itself at the current rate to its own members was not accepted. The committee feels that it would have no great difficulty in selling 20,000 sq. ft. of floor space, and at \$1.50 per sq. ft. it would have an income sufficiently large to meet all expenses. Estimates were that at recent exhibitions considerably more than 20,000 sq. ft. of space was taken by machine tool exhibitors—in one case, perhaps twice as much. It also developed that one recent exhibition of 57,000 sq. ft. cost to operate \$22,000.

The point was made in the discussion that machine tool manufacturers desiring particularly to reach the railroad field, for example, will wish to exhibit at the Master Mechanics' exhibition at Atlantic City. A view was finally expressed that, while the machine tool build-

ers have become greatly concerned over the multiplicity of exhibitions which they are expected to patronize, and while the development of its own show is in part to reduce the expenses on account of exhibitions, it must be left to the individual manufacturer to decide what other shows to cover. Considerable stress was laid on the fact that the machine tool features of recent exhibitions, in part due to their having machinery in operation, have proved to be the centers of attraction. While the thought was not definitely stated, the view seemed to be that the independent machine tool builders' exhibition would draw to it those people highly interested in the metal working production matters, even if similar exhibitions continue to be a part of the exhibition of the steel treaters' organization and the American Foundrymen's Association, for example.

It was enthusiastically suggested that a machine tool sectional meeting might reasonably be expected to be held at the time of the association's exhibition by the American Society of Mechanical Engineers, and likewise that a production meeting of the automobile industry would be a likelihood. Meanwhile the management of the New Haven exhibit, conducted in recent years by the New Haven section of the American Society of Mechanical Engineers, Yale University, and New Haven interests, has been thinking of alternating with a show in a western city. Thus it would be that a New Haven show would occur in one year and in the following year a show further west. One plan in this connection not yet clearly determined contemplated holding the western show in the same year that the master mechanics convene at Atlantic City. As this is held biennially, the New Haven exhibition would occur in the intervening years. The feeling was apparent that, with the machine tool builders entering

the exposition field, the proposed expansion under the auspices of the mechanical engineers' society might be abandoned.

The association's final decision was to hold its convention in the fall of 1927 and it selected Cleveland as the industrial center well situated for such a show.

## To Consider Standardization and Simplification

**R**ENEWED interest in standardization developed on the reading of a paper on internal plant standards by James E. Gleason, president Gleason Works, Rochester, N. Y. The meeting voted that a committee of three be appointed to consider association work on standards, said committee to report as soon as possible. The expression was general that the members of this committee should be standardization engineers in machine tool building plants, or at least engineers who are giving a portion of their time specifically to the matter of standardization. Also it was emphasized that the executives should encourage the movement to the extent that they would authorize the men appointed to the committee to travel to the point of the committee meetings. These views were due, apparently, largely to the fact that earlier efforts on the part of the association to develop standards had come to little, though there are admittedly numerous opportunities for agreement over matters which lie outside of controversial territory.

Mr. Gleason presented at length the practice of the Gleason Works in collating shop standards and brought to the meeting an impressive loose-leaf book compiling these standards. An important point he made was that when such standards are readily available for the designing and drafting departments old and tried ideas will be incorporated in new construction. In the case of the Gleason Works a meritorious detail that had proved satisfactory years ago had been overlooked until a methodical system of collecting the shop standards was brought about, and the result was the abandonment of a later detail which had weaknesses removed by the adoption of the older design.

He illustrated the interesting case of a bevel gear cutter built for a special purpose high-production machine and made up of standard parts to the extent of 60 per cent. Incidentally the machine was fitted with special chucking which succeeded in increasing the hourly production of pinions from 90 to 155. This requirement, he mentioned in passing, was the result of a demand not so much for the production of the ma-

chine itself as for the production in terms of man hours, and the machine was fitted with three levers requiring only the three motions for the making of each gear.

Mr. Gleason listed a considerable number of possible standards which could be developed, some already in the hands of other associations, such as the American Gear Manufacturers' Association, the Grinding Wheel Manufacturers' Association, the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the American Engineering Standards Committee.

The point was brought out that the standardization movement on tee slots and tee bolts had been substantially completed, so that the matter will shortly be put up for ratification to the mechanical engineers and the machine tool builders for transmission and final adoption by the engineering standards committee. Among the matters which seemed most fruitful for the proposed standardization work of the machine tool association were mentioned drawing room practice, limits of fits, and direction of rotation of controls.

In passing also Mr. Gleason pointed out the desirability of standardization in the matter of the elimination of some machine speeds. An investigation of 74 machines made by 20 machine tool manufacturers covering pulley speeds of single pulley drives showed a range of 230 to 1200 r.p.m., 21 different speeds in all, whereas six would suffice on a list of preferred speeds such as 300, 400, 500, 600, 800 and 1200. A step in this direction, along the lines of the simplification movement which has been given such an impetus by Secretary of Commerce Hoover, would make, he said, for a decided reduction in gear changes.

The notable work of German machine tool manufacturers in the direction of standardization was referred to at some length, but the view was rather general that this had been carried altogether too far and that the standards were largely on paper, as many of these German machines failed to show general adoption of a considerable number of these standards.

## Insuring Profits by Intelligent Pricing

**W**HAT a manufacturing company ought to earn, said W. L. Churchill, industrial engineer, White Plains, N. Y., in addressing the National Machine Tool Builders Association last Thursday at Providence, R. I., is 100 per cent on its conversion cost. "Your conversion cost," he added, "is the total cost of manufacturing less the cost of the material for the goods manufactured." The manufacturing cost, he continued, includes labor, overhead (rent, also, if the operations are conducted in rented property) supplies incident to the manufacturing apart from material going into the articles of manufacture, a margin to go into a reserve for possible expansion or the purchase of new equipment, and so on.

Though his contention was received with surprise, he emphasized that the 100 per cent figure was a minimum. Also he pointed out that pricing on this basis was figured for normal operations. Where statistics were faulty or lacking in this particular, he took 65 per cent of the plant capacity for normal. When a plant is run at a rate above normal, for each 1 per cent gain in volume above the normal, there was sometimes a 2 per cent gain in the profit. Conditions among industries varied so much that in one case, for example, the increased profit was 1.2 per cent for each 1 per cent expansion in volume. Relatively large labor expense might be an explanation, as with much increase in plant output, wages are calculated to advance

along with a lowering of labor efficiency, not to mention the addition to the forces of the less skilled workers.

With a dropping below normal, he outlined briefly that in one case profits disappeared at a 44 per cent operating rate but in another, they did not cease to materialize until the slackening went to 30 per cent.

Mr. Churchill talked on the topic, "Insuring Profits by Intelligent Pricing." He spoke without notes and special interest developed out of questions asked, brought out the assertion quoted above, as to how much a company should earn. He laid a great deal of stress on the desirability of the members of the association coming to a common conviction that a certain thing, such as the mentioned price basing, is safe and sound; and then acting on it for the good of the industry. There is nothing of illegal collusion, he urged—nothing but a recognition of the sane basis of a given idea, only that the recognition must be one of conviction, which if thoroughly firm will bring about an improvement in practices. The thought, he said, must be on the net income, not on the volume of business. "We have all gone after volume," said he; "what we should go after is profits."

### Sales Managers Should Not Set Prices

Mr. Churchill began his address with the statement that manufacturers seemed ashamed to make profits

and he quickly came to the assertion that neither sales managers nor salesmen should have any right to set prices. He admitted that much that he had to say applied particularly to the manufacturing of staple commodities, but he urged the machine tool builders to get behind any propaganda aiming at a rational pricing method for the good reason that when the manufacturer of general commodities is prosperous, then only can the machine tool builder expect to do very much business.

Buying of machine tools is rarely done except out of capital reserves or surplus, and the buyer must make money before he can acquire machine tools. The result is that when such companies are not making money, sales of machine tools have to be limited largely to new enterprises and with new capital.

He dwelt also on the situation among manufacturing plants wherein to avoid buying new equipment repairs are constantly made. When he finds that the repair item averages over  $3\frac{1}{2}$  per cent of the cost of a new tool, he stresses that the equipment needs special consideration and has no difficulty in pointing out that the expense of the repair department has not properly been appreciated or that its inefficiency has not been recognized. He discussed several specific cases which had come under his observation. Commonly the repairing has been kept up because of the absence of any money to replace machinery by that of admittedly higher efficiency and capacity.

Illustrations were also given to point out the prevalence among manufacturers to seek volume rather than to focus on profits. He left the impression that many companies would do better to try to make a definite amount of money per week, say, rather than a definite output. His talk also was calculated to show the value of trade associations in eliminating destructive practices. For example, he told of one manufacturer bidding considerably below cost on a given piece of equipment, because he knew there was no chance for getting the contract, but that instead the competitor would be allowed to meet the low price and would undoubtedly do so and secure the contract, a fact which was actually borne out as expected. The address developed active discussion, bringing out Mr. Churchill's view as to the basis of profits mentioned at the beginning of this review of his contribution.

#### Promise of Railroad Tool Purchases

SOME tendencies which are favorable toward the steady purchase of machine tools by the railroads were outlined by Roy V. Wright, editor, *Railway Mechanical Engineer*, New York. He emphasized, however, that no increase of any note was to be expected over the amounts bought in recent years, pointing out instead the change in attitude in railroad managements, which dates from the dislocation of railroad service occurring in the war and which means that the mechanical departments now come in for more consideration than formerly. The tendencies to which Mr. Wright referred are in brief as follows:

The railroads strive to keep equipment, such as locomotives, in repair shops as short a time as possible. This calls for increased shop production. Efforts are being made to schedule shop operations, and failures to meet speed in repair work focuses on the weak features of the shop equipment. A few shops are run in terms of unit costs, and there is an intensive study to get the most on a man-hour basis. There is a distinct effort to train foremen and to secure supervisors trained for and capable of leadership. In cases these foremen are sent to other railroad shops, thus to learn of improved processes or methods, and incidentally of new machines. The question of stabilization of shop employment is receiving attention and has an indirect effect on the shop equipment.

Finally some extended reference was made by Mr. Wright to the 3- to 10-year betterment programs adopted by a number of railroads, though he reminded the meeting that sometimes a road could show greater returns from a remodeling of a freight yard than from replacement of tools in a shop; also he pointed out that the railroads cannot charge new machine tool pur-

chases to operating expenses, and can get credit for only the book value of an old tool when one is replaced.

#### Reconditioning One's Own Machines

RECONDITIONING and resale of one's own machine tools came in for discussion. The representative of one company explained that it gets about two-thirds of the price of the new machine for the one that it reconditioned, while it buys such machines at 25 per cent of the price, although in special conditions it may pay 35 to 40 per cent, but not over 50 per cent. The view was expressed that such a practice was calculated to affect adversely the attitude of a company's salesmen. It was felt that such salesmen might be influenced unduly toward selling the reconditioned machinery when they might just as well sell the new product.

One other manufacturer's representative at the meeting described his company's procedure. It will take over one old machine only for one new one. It has printed instructions beyond which no salesman may go. It only allows the payment up to one-sixth of the current price of the corresponding type of machine. It does not resell the machine as it is purchased, but the machine must be reconditioned, and it is a fixed practice that the resale price be two-thirds of the current price of the corresponding type. This company is not concerned with any possible adverse effect on salesmen, for the reason that there is a demand for all the reconditioned tools it can provide. These machines incidentally are sold not with the guarantee that they are as good as new, but that they perform as well as a new machine. The point was made, as it has been in other meetings, that there is something in the point of a manufacturer's reconditioning its own machines in view of the common attitude of the buyer's holding against the manufacturer, rather than against the seller of the machine, any shortcomings which develop.

#### Selling on Deferred Payments

THE matter of deferred payments on selling machine tools was discussed by the representative of one company which has had some experience in this direction. It began the practice in 1908. The company feels that it gets additional business by the practice and that this is not necessarily business taken from competitors, but instead it comes from companies which have very little for financing equipment buying. The company has suffered no losses and instead finds the handling of such business better in this respect than that of open account sales.

The one difficulty is that legal advice needs to be obtained as to the laws in the various States. One must know how to handle the situation in each case. While the sales are made with the protection of what is a chattel mortgage, they are pursued under the more euphonious term of purchase money contracts, which are nevertheless recorded in the usual legal fashion.

The company has not observed any losses that are appreciably greater than those suffered under the open account plan. Repossessions have been infrequent and under no circumstances at a loss to the machine tool builder himself. The sales are made rarely for over six months' time, with nine to eleven months occasionally allowed. In the case of sales of some repossessions, when it is found that the original buyer has overpaid, a refund is made to him for the overpayment. An insurance policy is issued against each machine. A charge of 6 per cent is made after 30 days. An initial payment of rarely less than 25 per cent is required, taken with the acceptance of the contract, although sometimes it has amounted to 20 per cent. Stress was laid on the fact that it is important to have all arrangements clearly understood. It was added further that fairly good sized companies have bought on the deferred payment plan, presumably when there have been other needs for such funds as were available.

#### Status of Exports

THE new classification of machinery for exports, together with a glossary of terms for use in that connection was offered by the committee on relations with



the Department of Commerce as a concrete result of its work. The report, presented for Chairman J. E. Andruss, Barnes Drill Co., Rockford, Ill., by C. L. Cameron, Gould & Eberhardt, Newark, N. J., stressed the fact that favorable results were obtained so quickly. The classification numbers, it was emphasized, are calculated to make it the easier for the shipper to designate the proper grouping without leaving the designation to the illy informed exporter's clerk, and that thus statistics of exports will be of increased value. W. H. Rastall, chief of the machinery division of the Department, came in for special mention in assisting and expediting the result. The effort now is to get the Bureau of the Census to adopt the same classification.

Mr. Rastall later discussed the present condition of foreign trade. He emphasized particularly the possibilities of a greater volume of business in India and that the possibilities in Latin America should be watched. In the former case there was a decided need, in his opinion, of a representative being established in India, and probably a triangular arrangement made in the interest of a group of American machine tool builders, with the American representative in India to keep in touch with the user and a representative in London, say, who would be the cultivator for American machinery among the financial people having a say respecting Indian purchasers. As to Latin America, he mentioned the increasing exports of automobiles, for one thing, and the consequent attention paid to road construction, both requiring repair facilities and resulting in the equipment of garages, representing, as he expressed it, young machine shops.

During 1925, Mr. Rastall said, the United States shipped to Great Britain more than \$4,000,000 worth of metal working machinery, or, in other words, a volume equivalent to more than half of that of the British exports to all destinations.

"Correspondingly, our manufacturers shipped to Germany nearly \$3,000,000 worth of such machinery, a volume representing roughly 15 per cent of the German exports in the face of the present German price situation.

International Trade in Metal-Working Machinery		
American Exports		
1924		1925
\$14,589,511		\$22,036,796
British Exports		
6,019,682		7,539,108
German Exports		
12,721,814		18,412,394
United States to United Kingdom		4,053,267
United States to Germany		2,986,434

"Europe now takes 62 per cent of these exports," he continued, "a greater share than has been the case since 1919. The shipments to Latin America are now in excess of 12 per cent, which is considerably above the participation of pre-war years. Expressed in dollars, the volume of these exports to Latin America during 1925 is approximately four times as great as in the pre-war period."

#### Contracts in Making Special Machinery

THE handling of the commercial side of the making of special machinery was discussed briefly in what may be termed a progress report of the standard sales practice committee, Albert J. Gifford, Leland-Gifford Co., Worcester, chairman. Mr. Gifford put special machinery into three classes. One of these is that covering standard machines for which there are special parts or attachments ordered. The second classification is that for which there is reliable knowledge of the cost of manufacture and of the production capabilities and also of the proper selling price. The third class covers machines for which there is no precedent or idea of proper cost, proper selling price or production possibilities.

The investigation of the committee up to date has shown that contract forms existing show no uniformity. He emphasized that a fundamental should be provided that such special machinery should not be subject to cancellation, for the reason that little or no use can be made of the parts of such machinery. He stressed the importance of the signing of a contract that particularized all the details, but as there is considerable

resistance to signing such a contract, instead a common practice is for a proposal to be accepted containing in detail these various stipulations.

He admitted that there are times when there is a good reason for a customer not to go through to completion on the construction of special machinery, but none the less the builder should be protected. He was entitled to a penalty provision providing payment to cover the amount of work done. Such payment is presumed to cover a proper profit.

Respecting the third class and the thought that there is more or less of a divided responsibility, he felt that the manufacturer and the customer might well work hand in hand in the matter of the financing. This might mean one or two payments preliminary to the point of making a proposal. Where complete drawings are required, certainly the manufacturer, he urged, has the right to expect the customer to bear such expenses. In the first class, salvage of parts is likely. In the second, there is little or no salvage, and of course substantially no opportunity for recovery of expenses in the matter of the third class of special machinery.

Expressing the view of the committee, he pointed out that it is important to have approval of drawings and that certified prints ought to belong to the proposal, else there will be tangling questions over changes after a contract has been signed.

#### Dealer, Advertising and Other Relations

AN extended program of activities was mentioned in the report of the committee on dealer relations. J. C. Carlton, Carlton Machine Tool Co., Cincinnati, as committee chairman, explained that a close working arrangement with the dealers had not been effected pending the further welding of the dealer organization now in progress and soon to meet at French Lick Springs. What is planned to be considered by a joint committee of the two bodies includes the following: Standard forms or clauses covering maker-dealer relations; forms or clauses covering user-seller relations; special discounts to schools; disposal of second-hand or rebuilt tools; distribution of machine tools by industries and territories; reports of quotations made; data respecting second-hand tools sold or offered for sale; codes of ethics covering relations between dealer and maker, and the development of a standard telegraph code.

Representatives of the War Department met with a committee of the society to help establish capacity of the industry in terms of war emergency. Roughly it was decided that the capacity should represent what a given company could make in an 8-hr. day, with its various products proportioned in accordance with relative demand for a period of time. A plant that is operating on a 10-hr. shift would under such a condition have a capacity of 125 per cent of the basic idea of measurement. In the event of a sudden war emergency, it would be expected that machine tool building plants, for example, would continue to manufacture each type of machine in amounts proportional to the average demand over recent years and at a full rate basis, until orders were received to the contrary. Meanwhile, it was emphasized that representatives of the War Department will make an actual survey of each plant under the direction of a district head.

The further cooperation of members in the use of slogans and permission of the board of directors to offer a prize or a commission for a design of an association symbol or seal was asked by the advertising committee, whose report in the absence of Chairman Frederick B. Heitcamp was presented by E. Payson Blanchard, Bullard Machine Tool Co., Bridgeport, Conn. The committee also requested an appropriation for art work and copy toward improving the effectiveness of its current advertising, and all of these, together with items referring to "inserts" and second-hand machinery advertising in industrial publications, were referred to the board of directors.

#### Changed Attitude of Public Toward Business

H. M. Lucas, Lucas Machine Tool Co., Cleveland, in his address as president of the association, stressed the

marked change in the last few years in the public's attitude toward business and business men. "Only a short time ago," said he, "men who did wonderful work in organizing cheaper production and distribution were held up to scorn in the public press; now they are praised. A growing number of people are now willing to subscribe to President Coolidge's statement that 'True business has for its main reliance truth, faith and justice.'"

"The first attitude," continued Mr. Lucas, "was common when business men were in the individualistic stage. The later attitude came about when business became cooperative in furthering the interests of business. The trade association has become a bureau of economic information for its industry, and its secretary has become essentially a consulting economist for the industry."

"Of course the main object of these associations is to benefit the business concerns who support the organizations. But in attaining this object, there are many valuable by-products, such as the change in public sentiment, that has been so noticeable. Business men spend much time on organization work, because it is good business to serve their community or industry in that fashion. They find it good business to think in terms wider than their own shop walls; to think in terms of their community, their state, their industry, their nation. Each year such work helps to make our country a better place to live in than it was the year before, and also makes it a better place to do business."

In his report as general manager Ernest F. DuBrul said he believed that no association work is more valuable than that dealing with the study of business conditions affecting the industry. "Each year more and more industries are beginning to gather and report and compare facts. This widespread movement is helping our industry right now. Leading executives of large buyers of machine tools are putting their brains to

work on the problems of business stabilization. They are engaging qualified men to study buying, selling and production policies, with that end in view."

"As more and more of the large users of machine tools adopt this policy, we shall see more orders for machine tools placed just when we want them most, and, of course, less orders placed just when we need them least. That, of course, means a more stabilized market for tools, more stabilized employment and production, more stable costs, and more stable profits. Of course improvement in these respects is bound to be slow. We shall never see the time when all machine tool buyers will have consulting economists at their elbows, nor when economists can forecast conditions with absolute certainty. So we can never expect to smooth out all the fluctuations in demand. They are too much a part of the very nature of machine tool demand to hope for their elimination. We can only hope for and work toward gradual decrease in their violence, and while doing that, we must learn to run with the tide that we cannot control."

An extended report was presented by the cost committee on the determination of a basic period from which to figure normal burden, a subject growing out of the fact that the machine tool industry is subject to large swings in its cycles of prosperity and depression.

A paper on the standardization of thread sizes that are cut with self-opening die heads was read by C. W. Bettcher, secretary Eastern Machine Screw Corporation, New Haven. It was well received and a special vote of appreciation was given to the author.

The Providence hosts of the meeting provided excellent weather and an interesting diversion in the shape of an unusual luncheon and a meeting place for one session at the Squantum Club, a club organized solely as a private eating resort, about five miles outside of Providence. Other sessions were held at the Providence-Biltmore Hotel.

## Photographing Strain Lines of Delaware Bridge Parts

Some large, cumbersome portions of one of the steel towers of the Delaware River Bridge were recently tested in the large hydraulic machine at the Bureau of Standards for the purpose of determining the "yield point" of the material and photographs were taken which reveal plainly the strain lines in the

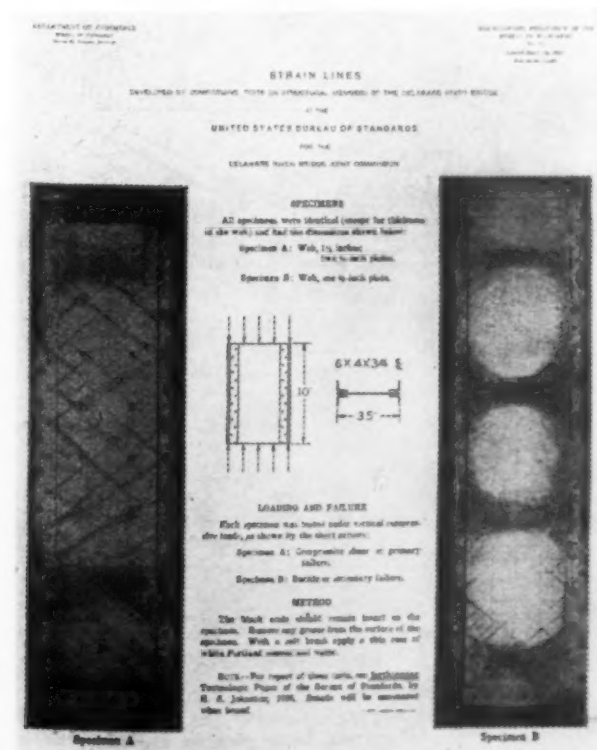
steel subject to the load. The testing machine employed can exert a compressive load of 10,000,000 lb., and is the only one in the country which could be used for the large specimens examined.

A statement by the Bureau continues:

If the brittle black mill scale has not been removed from the plates, this scale will fall off the plates, exposing the steel beneath. Engineers have for years carefully watched for this scaling on specimens tested in the laboratory.

The loads at which "scaling" commenced were recorded. To make the scaling more readily visible and to allow this interesting phenomena to be photographed so that engineers could study the behavior of the specimens under load, experiments were made with white coatings. When the yield point of the steel underneath the white coating was reached the mill scale and coating fell from the plates leaving a dark line. Thus the strain lines could be readily seen and many photographs were taken showing where high stresses were first reached.

A miscellaneous publication of the Bureau of Standards, No. 72, which has been prepared showing in one sheet, suitable for framing, two typical photographs with a description of the specimens and the method of applying this coating of "white wash" may be obtained from the Superintendent of Documents, Government Printing Office, Washington, for 5c.



There were 208 less merchant vessels and yachts documented in this country during the last fiscal year than in 1924, and 650 less than in 1923, according to a report made public by the Bureau of Navigation, Department of Commerce. The aggregate tonnage of all vessels documented in the United States in 1925 was less by 34,655 tons than in 1924 and 878,832 tons less than in 1923. The explanation of this decline lies largely in the scrapping of obsolete wooden vessels by the Shipping Board, according to Bureau of Navigation officials.

# Cast House Arrangement Unusual

Improved Methods of Handling Hot Metal and Cinder  
at Indiana Harbor Plant—Furnace Has Six-  
teen Tuyeres and Capacity of 700 Tons

THE cast house of the No. 2 blast furnace of the Youngstown Sheet & Tube Co., Indiana Harbor, Ind., marks a new departure in design. A spur from the hot metal track extends under the cast house roof, which provides protection for the ladles during casts. To facilitate handling materials in and out of the cast house, a cast house crane is mounted on a runway spanning the hot metal track. A cinder track is situated on the side of the house opposite the hot metal track. Cinder may be run directly to pots on the cinder track or to a granulating pit, located at one corner of the cast house. The pit and the cinder track are served by a monorail hoist and bucket, so that either molten or granulated slag may be removed to any point over the track.

Cast iron runners with concrete foundations were provided for both slag and iron. The cast house is 70 x 115 ft. and, together with the blast furnace skip incline, was erected by the Worden-Allen Co., Milwaukee. The cast house crane is a 10-ton three-motor machine and was furnished by the Morgan Engineering Co., Alliance, Ohio.

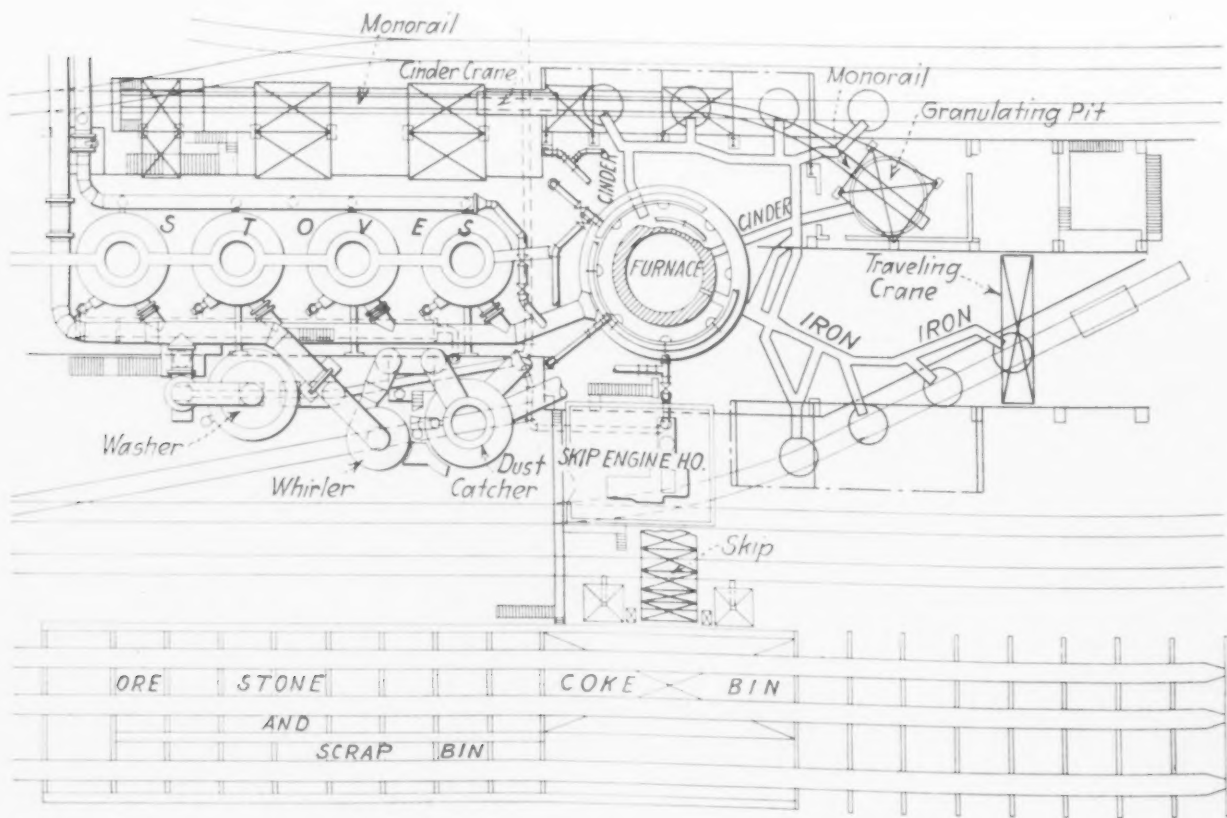
The entire layout and design of the plant reflects efforts to arrange the various units in a compact, yet well grouped, whole, at the same time allowing ample and readily accessible space for operations. Practically all work is carried on at two distinct elevations. The hot metal, cinder and scale car tracks are at, or near, yard elevation. The cast house, cinder pit, stoves, gas cleaning system, hoist house and the top of the storage bins are at a higher level.

The bins are well arranged. A single central coke

bin is superimposed over the skip pit, and there are eight double-pocket ore, stone and scrap bins with pockets on both sides of the scale car track. Incoming material is handled on three parallel tracks on top of the bins. The center track is situated so that by use of a side-dump car either set of pockets may be filled. Motor-driven rotary gates have been provided on the ore bins, and the scale car serving the bins is of the double-compartment electrically driven type. Coke is delivered from the central bin by gravity to the individual skip tubs. During its descent the coke passes over Robins rotary grizzlies, which remove the braize. The grizzlies are mounted on wheels so that they may be withdrawn from the chute for repairs. To permit making repairs to the grizzlies, auxiliary bar grizzlies may be substituted. The braize which passes through the grizzlies is removed by a Beaumont skip hoist and elevated to an overhead storage bin, which may be emptied at intervals to an open-top freight car at yard level.

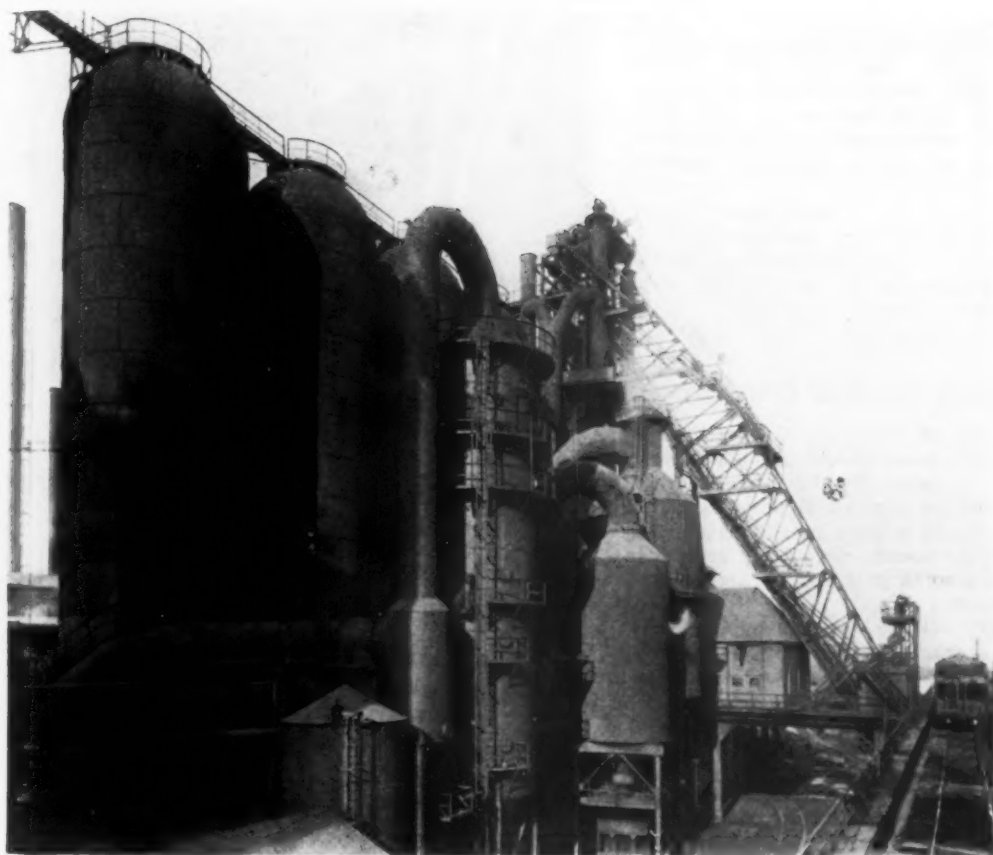
## Furnace Has Sixteen Tuyeres

The furnace, which was blown in March 23, 1925, is the first large stack in the country to be built with 16 tuyeres. Other 20-ft. and 21-ft. furnaces have but 10 or 12 tuyeres. There are eight cast iron columns, permitting symmetrical spacing and assuring good working room. The concrete foundation is of massive design with nine steel foundation bands encircling the hearth and extending above the column base plates. The base plates and the lower end of the columns are firmly embedded in a heavily reinforced concrete beam.



The Cast House Has a Novel Arrangement. A spur from the hot metal track extending under the cast house roof is commanded by a 10-ton traveling crane. Cinder is run either to a granulating pit or to pots on a cinder track. Pit and cinder track are served by a monorail hoist





*Practically All Operations at the Plant Are Carried on at Two Distinct Levels. The hot metal track (to be noted below) and the cinder and scale car tracks are at yard elevation. The cast house, cinder pit, stores, gas cleaning system, hoist house and the top of the storage bins are at a higher level*

The mantle is of built-up construction and the shell is fabricated of 1-in. plates throughout to protect against distortion and corrosion.

#### Capacity Is 700 Tons

The furnace has a rated capacity of 700 tons per day and is 95 ft. in height. In size it compares favorably with the largest stacks in the country; in fact, its size represents an economic compromise between in-

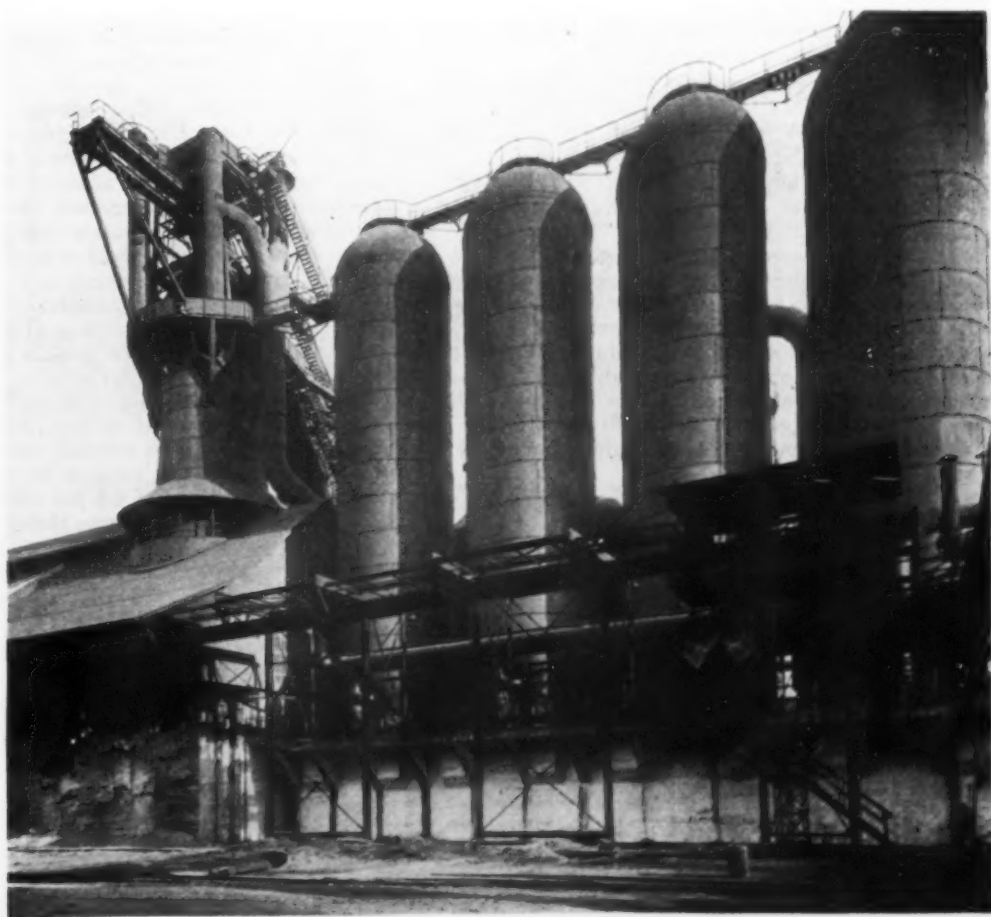
creasing cost of plant, with auxiliaries, and unit tonnage output.

Its dimensions compare with those of the No. 1 furnace at Indiana Harbor (blown in Aug. 24, 1918):

	No. 1 Furnace	No. 2 Furnace
Working volume .....	25,500 cu. ft.	28,690 cu. ft.
Hearth diameter .....	18 ft. 6 in.	20 ft. 6 in.
Bosh .....	22 ft. 6 in.	24 ft.
Height .....	92 ft.	95 ft.

For blowing the furnace an Ingersoll-Rand turbo-

*The Cinder Track, Shown in the Foreground, and the Granulating Pit, Located in the Cast House, Are Served by a Monorail Crane Hoist*



blower was installed, making a complement of three machines for the two furnaces, permitting one to be held in reserve as a spare. The blower is of 4-stage design, driven by a 7-stage impulse turbine and capable of supplying 60,000 cu. ft. of free air per min. at a pressure of 30 lb. The wind capacity of the furnace, of course, has a direct relation to the larger number of tuyeres.

The Freyn Engineering Co., Chicago, was retained for the construction of the furnace. On the behalf of the Youngstown company, C. S. Robinson, W. C. Reilly, H. S. Braman, W. B. Gillies, and the late K. Solle, were most active in cooperating with the engineers.

### Analyses of Lake Superior Iron Ores

Analyses of Lake Superior iron ore during the season of 1925 are contained in an annual analysis booklet issued by the Lake Superior Iron Ore Association, Cleveland. Heretofore, the analysis figures published by the association have, to a large extent, shown the expected analyses for the season. Departing from this custom, the table this year show the actual analyses of ores shipped during 1925.

Formerly practically all the analyses published by ore firms were actual averages for the previous season's shipments, except for new ores; but of late it has become more and more customary for the ore firms to publish the expected analyses for the year. As the analysis book of the association is prepared largely for record purposes, the association decided to limit its tables to the actual analyses of each season's shipments. Analyses of about 200 ores are listed.



Coke Is Screened in Rotary Grizzlies, Which Are Mounted on Wheels So That They May Be Removed for Repairs

## Effect of Titanium on Cast Iron\*

Action Similar to Silicon But More Active—Effect on Mechanical Properties

WORK carried out in Germany and America from 1896 to 1914 on the effects of titanium in cast iron lead to contradictory results, which the author attributes to the following reasons:

1. Use of too rich a ferrotitanium which was but slightly fusible and therefore incompletely absorbed by the cast iron;
2. Use of a ferrotitanium high in carbon in which a considerable portion of the titanium was in the form of nitride or cyanonitride;
3. Premature addition of the ferrotitanium to the cast iron;
4. Estimation of the effect of the titanium from the amount added and not from the amount actually retained in the cast iron;
5. Lack of system in the investigations.

With a view to studying the problem more scientifically, the author started from a very pure Swedish cast iron containing 4.01 per cent carbon, 0.15 per cent manganese, 0.06 per cent silicon, 0.011 per cent sulphur and 0.019 per cent phosphorus, to which he first added various quantities of silicon so as to obtain three classes of cast iron containing 1, 1.75 and 2.75 per cent of silicon, respectively. To each class he added 0.1,

0.2 and 0.5 per cent titanium, and to the first one he also added 1 per cent.

The ferrotitanium used contained 20.9 per cent of titanium, of which only 1.2 per cent was in the non-metallic form (nitride, carbide, cyanonitride), and 0.15 per cent of carbon. The ferrotitanium was first fused with a small quantity of the cast iron under a layer of charcoal in an electric furnace, and the fused metal was then added to the remainder of the iron previously melted in a graphite crucible in a gas-fired furnace. The contents of the crucible (about 5 kilos or 11 lb.) were then cast into bars 20 mm. (0.79 in.) in diameter and 600 mm. (24 in.) long.

The results of the mechanical tests and of the analysis of these bars are given in the table and in Fig. 1.

Examination of these results shows that titanium acts in the same way as silicon, but that it is more active. The formation of graphite reached a maximum for a titanium content of less than 0.1 per cent, irrespective of the silicon content (see Fig. 2).

Addition of 1 per cent or more of titanium to the high-silicon iron and of 0.3 per cent or more to the low-silicon iron greatly improves the mechanical properties.

\*Abstracted by A. Papineau-Couture from an article by E. Piwowarsky in *Stahl und Eisen*, Vol. XLIII, pages 1491 to 1494, 1923.

Class	I				II				III			
Silicon, per cent	1.02	1.22	1.15	1.08	1.71	1.65	1.94	1.73	2.54	2.69	2.69	2.66
Ti added to iron, per cent	...	0.12	0.24	0.58	1.16	...	0.12	0.24	0.58	...	0.12	0.24
Metallic Ti in iron, per cent	...	...	...	...	...	...	...	...	...	...	...	...
Total Ti in iron, per cent	...	0.038	0.094	0.327	0.516	...	0.066	0.119	0.251	...	0.068	0.118
Loss, per cent	...	67.9	60.8	43.6	55.6	...	45.1	51.9	56.7	...	42.9	50.8
Total carbon, per cent	3.52	3.88	3.84	4.02	3.80	3.52	3.89	3.84	3.88	3.56	3.62	3.75
Graphite, per cent	1.89	2.53	3.03	3.10	2.82	2.24	3.29	3.25	3.25	2.89	3.32	3.19
Graphite as per cent of Total C, per cent	53.7	65.2	79.05	77.35	74.0	63.6	84.3	84.8	83.7	81.1	91.0	84.8
Bending strength, kgs./mm <sup>2</sup>	35.7	30.4	35.1	36.4	49.8	32.4	26.9	27.9	29.8	26.3	23.5	26.0
Deflection, mm.	5.9	5.3	6.8	6.4	7.2	6.1	6.7	6.2	5.7	7.8	6.9	6.7
Crushing strength, kgs./mm <sup>2</sup>	98.6	92.0	84.9	88.1	97.6	90.6	46.5	63.6	66.5	65.4	40.8	55.0
Brinell hardness	263	225	189	197	215	216	108	137	148	141	97	118
Resiliency, kg./cm <sup>2</sup>	1.1	1.1	1.7	1.3	1.5	0.9	1.4	1.6	1.3	1.3	1.2	1.1
Solubility in acids,* per cent	16.2	not det.	19.1	14.3	11.0	15.3	16.2	7.9	8.6	15.1	12.5	12.4

\*Solubility was determined on small test bars 5 mm. long and 15 mm. in diameter, which were immersed 24 hr. in a 1 per cent sulphuric acid solution.

This improvement is apparent only after the titanium has caused the separation of the graphite. This explains the frequently observed fact that titanium causes a greater improvement in gray iron than in white iron.

In spite of the precautions taken to reduce them to a minimum, the losses of titanium varied from 39 to 68 per cent. On the other hand, it is the first time that the total absence of metallic titanium in the iron is clearly brought out.

The effect of titanium cannot, therefore, be due to the formation of mixed crystals, nor to an intermolecular interposition of titanium. It can be attributed to:

- 1. The effect of titanium on the separation of graphite;
- 2. The reduction of the size of the graphite particles by the titanium and also probably to
- 3. Elimination by the titanium of non-metallic elements dissolved in the iron.

As far as the last point is concerned, it should be noted that so far it has not been found possible to determine by analysis the exact nature of the titaniferous residue remaining after the iron has been dissolved. Micrographic examination, however, permits identifying titaniferous inclusions in the metal.

As early as 1893 Woehler and Hogg identified titanium cyanonitride, which occurs as small brownish-red or copper-colored cubes. More recently, Vogel identified titanium nitride and carbide, the former as small, bright yellow, extremely hard particles, and the latter in a leaden-gray crystalline form, apparently crystallizing in one of the regular systems.

By micrographic examination the author was able to observe the presence of titanium carbide in all the treated irons. There were also distributed throughout the mass of metal very small cubes of copper-colored cyanonitride. Nitride was identified in but one sample. The titanium is therefore present mainly as carbide, which proves that the precautions taken in preparing the samples were of some use, since they prevented the formation of relatively large amounts of cyanonitride and of nitride.

With the low titanium contents the distribution of the carbide is fairly uniform; but with the higher contents the crystalline formations are larger.

The reduction in the size of the grains which result from the addition of titanium cannot be attributed to the action of the titanium on the molecules, since there is no metallic titanium in the iron. Rather, it is probable that, owing to the affinity of titanium for oxygen, sulphur and nitrogen, these impurities are absorbed by the non-metallic titanium compounds which, being insoluble in the iron, act as centers for the formation of titanium carbide, the latter taking place when the eutectic solidifies. The crystallization of the eutectic

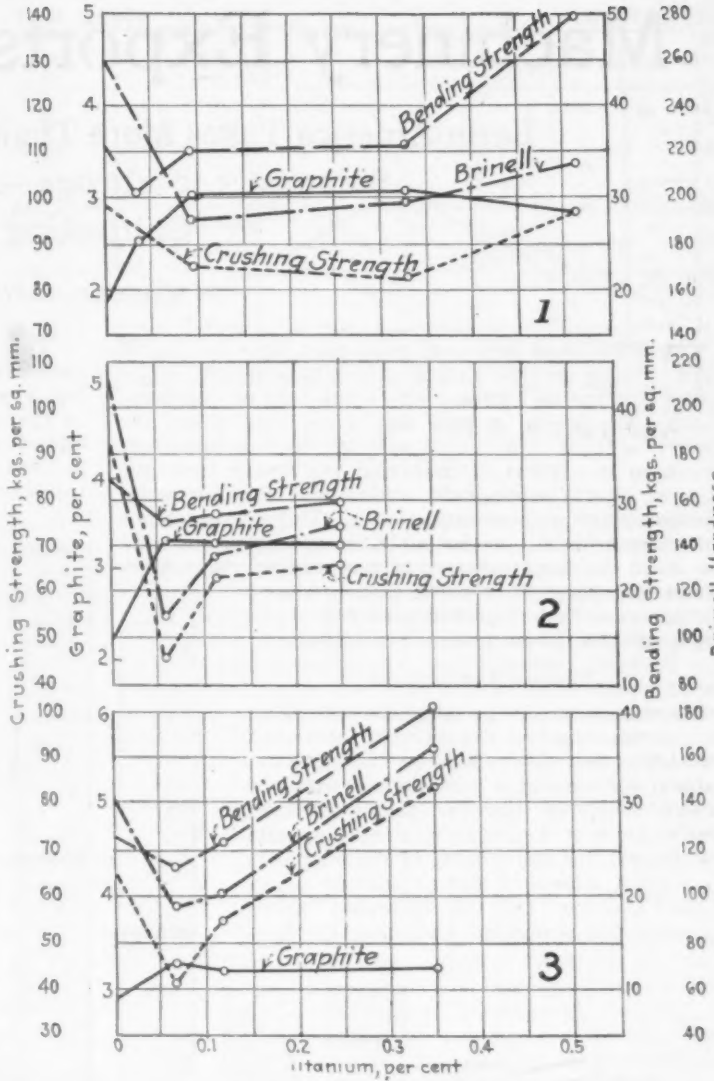


Fig. 1—Results of Mechanical Tests and of the Analyses of the Bars of Iron to Which Titanium Was Added in Varying Percentages

thus takes place in a finer network than when the impurities remain in solution in the metal.

British Iron and Steel Foreign Trade in March

Exports of iron and steel from Great Britain in March at 411,579 tons were larger than the February exports of 312,674 tons. Deducting scrap, the March total was 406,547 tons, or considerably more than the corresponding average for 1925 of 310,900 tons per month. The March data, compared with previous years, are as follows:

Exports of Leading British Steel Products in Thousands of Gross Tons Per Month

	First March, Quarter.			
	1926	1926	1925	1913
Pig iron and ferroalloys..	59.8	49.2	46.6	93.7
Iron bars, rods and shapes	3.1	2.9	3.1	11.8
Steel bars, rods and shapes	25.8	22.7	19.8	20.9
Hoops and strips.....	5.7	4.8	5.1	3.8
Plates .....	11.0	9.9	9.9	11.2
Black plates and sheets..	30.5	28.2	19.5	11.7
Galvanized sheets .....	78.1	71.6	59.4	63.5
Tin plates and sheets.....	53.5	47.2	42.6	41.2
Rails .....	27.0	24.7	17.3	42.2
Cast tubes, pipes and fittings .....	9.7	9.9	7.8	19.6
Wrought tubes, pipes and fittings .....	22.8	21.3	16.0	13.7
Wire and manufactures..	10.9	9.8	9.8	9.6
Total of all exports (except scrap) .....	391.4	360.8	310.9	414.1

Imports at 389,961 (227,578 tons aside from scrap) were less than the average for 1925 of 234,900 tons per month (226,750 tons aside from scrap).

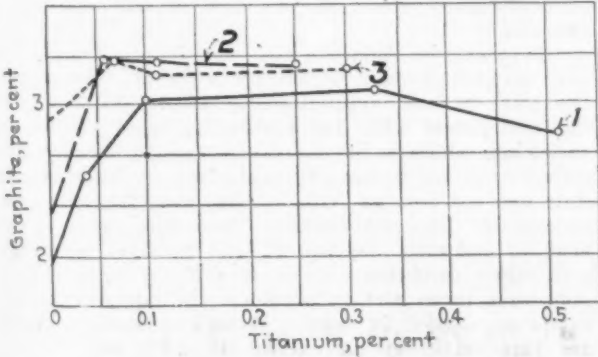


Fig. 2—Influence of Titanium on the Separation of Graphite



# Machinery Exports High in 1925

Latin America Takes More Than One-Third—Heavy Shipments to Europe—Asia Worth Cultivating

BY WALTER H. RASTALL\*

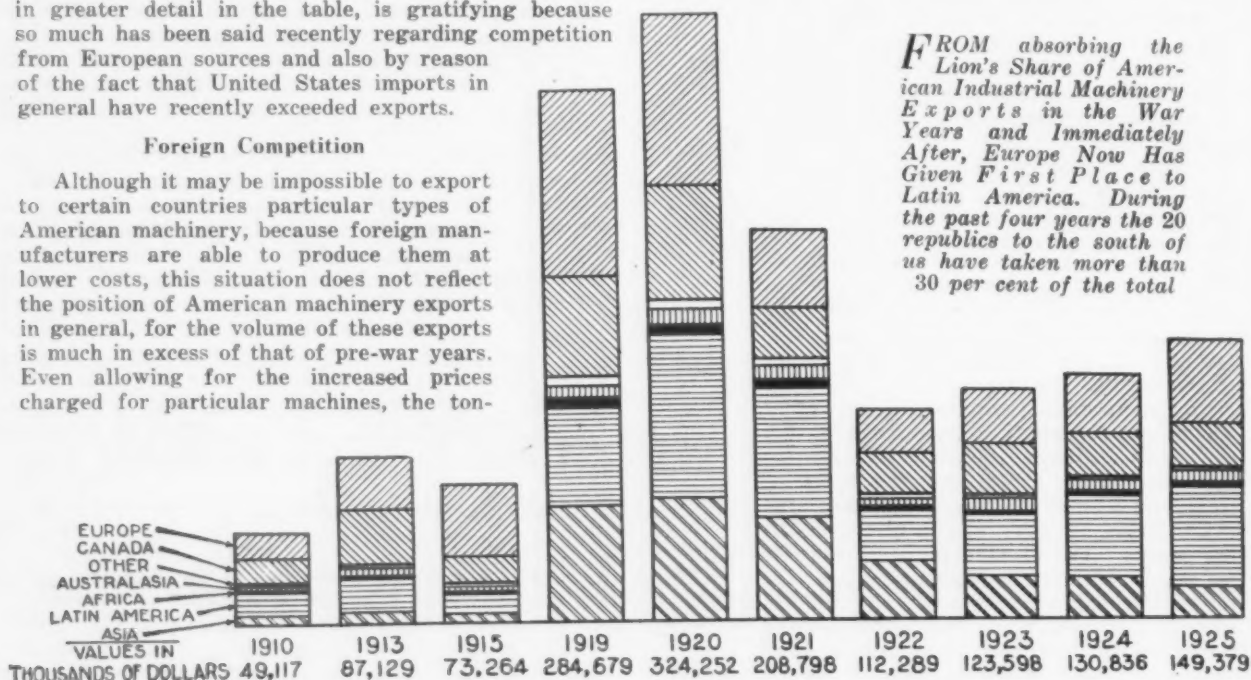
EXPORTS of industrial machinery from the United States in 1925 totaled almost \$150,000,000, representing an increase of 14 per cent as compared with 1924, which in turn was 6 per cent above the figure of 1923. In fact, there has been a consistent increase in exports of industrial machinery from the United States since 1922, which was the low point following the post-armistice boom. This record, shown in greater detail in the table, is gratifying because so much has been said recently regarding competition from European sources and also by reason of the fact that United States imports in general have recently exceeded exports.

## Foreign Competition

Although it may be impossible to export to certain countries particular types of American machinery, because foreign manufacturers are able to produce them at lower costs, this situation does not reflect the position of American machinery exports in general, for the volume of these exports is much in excess of that of pre-war years. Even allowing for the increased prices charged for particular machines, the ton-

For the past three years Latin America has absorbed a larger part of our machinery exports than has any other section. Particular attention is called to the rapidity with which exports to Latin America have increased—the expansion being from \$18,825,000 in 1913 to \$52,433,000 in 1925. The increasing use of modern types of machinery in these countries is sig-

*FROM absorbing the Lion's Share of American Industrial Machinery Exports in the War Years and Immediately After, Europe Now Has Given First Place to Latin America. During the past four years the 20 republics to the south of us have taken more than 30 per cent of the total*



nage now being exported is considerably in excess of the pre-war tonnage, while German and British exports have not yet reached pre-war volume. In 1925 the United Kingdom purchased nearly \$19,000,000 worth of machinery from the United States, and Germany took nearly \$6,000,000 worth—facts which are a splendid testimonial to the value and importance of American designs.

Since the stabilization of the mark and the inauguration of the Dawes scheme, German costs have been rising and competition from this source has been less serious. Similar abnormal competition from other European countries is being eliminated and, as stability approaches, American manufacturers have a position much more favorable than in pre-war years. In earlier years German manufacturers frequently sold machinery on credit, but during 1925 German interest rates were so high and banking conditions were such as to make these operations difficult.

In the United Kingdom the unemployment situation has caused manufacturers to bend every effort toward securing export business. But, in general, the British business situation has been confused and manufacturers there have found it exceedingly difficult to do business in non-British markets overseas. There is reason to believe that British manufacturers have felt German competition far more seriously than we have.

nificant. It is also important that, during the years when the exports of machinery from the United States were at a maximum, the participation of the Latin American countries in this expanded volume was comparatively restrained, while demand increased later.

Development was evidently in some degree interrupted by the abnormal conditions of the war, but, now that the world has been relieved of some of these conditions, the countries to the south of us are in a position to resume their natural development. As a consequence, in the last three years the Latin American demand for machinery from this country has been more intense and more persistent, possibly even more significant, than in any earlier time. Latin America is now taking about 35 per cent of our machinery exports.

Shipments to Asia are also significant. Contrasted with a value of about \$4,000,000 in the pre-war period, the total is now approximately \$16,500,000. Unlike the experience with Latin America, this volume is shrinking, which is the more unfortunate because this reduction is the result of unsatisfactory conditions in Asia and not because Asia has less need for industrial equipment. Reports indicate that Asia is in great need of industrial equipment, but political, economic and other conditions make it difficult to establish industries there and to purchase the equipment that would be needed in them. American manufacturers are justified in giving careful attention to the possibilities of all of the Asiatic and Latin American markets.

Europe is undoubtedly the best market for those

\*Chief Industrial Machinery Division, Bureau of Foreign and Domestic Commerce, Washington. This is an abstract of an address delivered before the May meeting of the National Machine Tool Builders' Association at Providence.

types of machinery used in manufacture—so-called production equipment. The amount of machinery shipped to Europe has increased consistently since 1922. It is now nearly double the volume of that year and gives evidence of further increase. Our best customers there are the United Kingdom, Germany and France—usually considered our most serious competitors.

It is significant that the value of American machinery absorbed in Germany increased from \$763,000 in 1923 to \$5,931,000 in 1925. If Germany is able to attain a more satisfactory economic position, this volume can be expected to mount rapidly. Meantime the machinery shipped to the United Kingdom expanded from \$12,791,000 in 1922 to \$18,879,000 in 1925.

In earlier years Italy did not rank high as a machinery market, but the amount of equipment shipped there has been growing rapidly, increasing from \$559,000 in 1922 to \$3,811,000 in 1925. Italy is being industrialized and waterpower properties in that area are being developed rapidly. Italian manufacturers of various products find that they are able to compete successfully on the world's market and further industrial expansion may be anticipated.

The situation in Russia is particularly interesting, the volume of our industrial machinery absorbed expanding from \$64,000 in 1922 and \$956,000 in 1924 to \$3,678,000 in 1925. The volume sent to Africa expanded from \$1,564,000 in 1922 to \$3,251,000 in 1925.

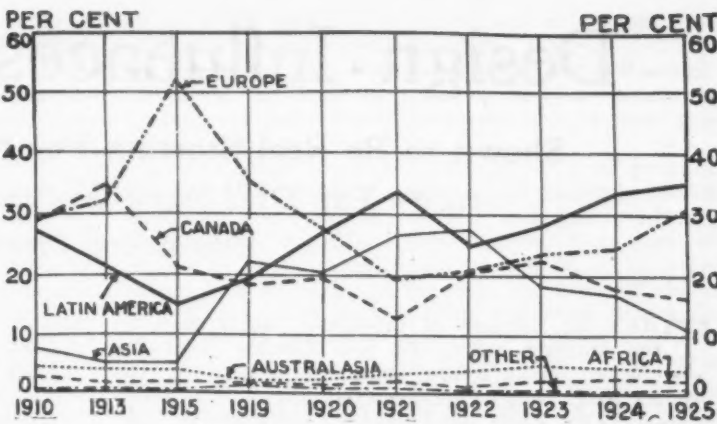
Value of Particular Markets

Canada is almost invariably our best market for industrial machinery and, apart from the abnormal experiences of 1919 and 1920, Canada has for years purchased annually between \$20,000,000 and \$30,000,000 worth of machinery from this country. The United Kingdom commonly ranks next in importance and takes a really large amount of machinery manufactured here. The volume is expanding rapidly and this market contains great possibilities for future business.

Both Cuba and Mexico are close to the United States and have long absorbed a large volume of our machinery. While these countries have their own particular problems, each should continue to purchase important quantities of machinery from us.

Argentina imports more equipment from here than does any other South American country. It is developing rapidly in a variety of ways and, while the character of machinery shipped there differs radically from the types which manufacturers ship to Europe, for many classes of equipment the Argentine market ranks high.

Since the earthquake Japan has been experiencing difficulties that tend to restrict business. During the same period China has been suffering from internal wars. Other factors have prevented an increase in the



Percentage Changes in Destination of United States Industrial Machinery Exports

amount of machinery shipped to the Philippines and to British India. As a consequence, the volume of our exports to Asia has been greatly reduced.

Particular attention is called to the experience in the Dutch East Indies, however, where the amount has expanded from \$291,000 in 1922 to \$2,033,000 in 1925. This increase, continuous and important, suggests more opportunities in that market than many American machinery manufacturers realize. The experience in British India suggests that American equipment is not adequately supported by sales effort in that area. Possibly, manufacturers could improve their work in both these areas by considering these two markets jointly.

Luxemburg Has Prosperous Year

WASHINGTON, May 7.—The year 1925 was a prosperous one for the iron and steel industries of Luxemburg, according to a report to the Department of Commerce from Consul General Messersmith, Antwerp, Belgium. The production of iron was considerably higher than that of 1924, but fell slightly short of reaching the 1913 output. Luxemburg's steel production was not only in excess of the 1924 output but was nearly double that of 1913. The largest single increase was in the production of Thomas steel, which rose from 2,114,885 metric tons in 1924 to 2,389,403 tons in 1925. A total of 37 blast furnaces was active during 1925, as against 34 during 1924. On Dec. 31, 1925, however, 10 blast furnaces were inactive.

The annual autumn meeting of the Institute of Metals (British) will be held in Liège, Belgium, Sept. 1 to 4, in accordance with the invitation of the Association des Ingenieurs de l'Ecole de Liège. This is the first meeting of the institute to be held on the Continent since the meeting at Ghent in 1913.

UNITED STATES EXPORTS OF INDUSTRIAL MACHINERY											
(In thousands of dollars)											
Destination	Fiscal Years			Calendar Years							
	1910	1913	1915	1919	1920	1921	1922	1923	1924	1925	
Canada, Newfoundland, etc.	14,113	30,637	15,449	52,346	63,157	26,966	23,010	27,719	23,297	24,134	
Europe (except Balkans)	14,149	27,683	38,219	100,397	90,731	41,100	23,236	28,427	32,159	45,688	
South America	4,309	7,739	4,457	24,048	28,736	23,181	11,385	14,965	19,247	26,328	
Mexico and Central America	6,412	6,209	2,590	11,144	21,235	23,373	9,609	9,608	11,524	13,005	
West Indies	2,763	4,877	4,013	19,369	38,387	23,780	7,026	10,254	12,701	13,100	
Total Latin America	13,484	18,825	11,060	54,561	88,258	70,334	28,026	34,827	43,472	52,433	
Asia (except Asia Minor)	3,666	4,377	3,777	61,880	65,308	55,599	31,037	22,577	21,826	16,582	
Australasia	2,200	3,560	2,987	5,672	8,044	7,605	4,516	6,476	5,774	6,039	
Africa	1,353	1,592	1,490	5,183	5,314	4,487	1,564	2,543	3,358	3,251	
Other countries	152	455	282	4,640	3,440	2,707	906	1,029	950	1,252	
Grand total	49,117	87,129	73,264	284,679	324,252	208,798	112,289	123,598	130,836	149,379	
Percentage to—	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Latin America	27.5	21.6	15.1	19.2	27.2	33.7	24.9	28.2	33.2	35.1	
Asia	7.4	5.03	5.2	21.7	20.1	26.6	27.6	18.3	16.7	11.1	
Canada, Newfoundland, etc.	28.7	35.3	21.1	18.4	19.5	12.9	20.5	22.4	17.8	16.2	
Europe	28.8	31.9	52.2	35.2	28.0	19.7	20.7	23.0	24.6	30.6	
Australasia	4.5	4.1	4.0	2.1	2.5	3.6	4.1	5.2	4.4	4.0	
Africa	2.7	1.8	2.0	1.8	1.6	2.2	1.4	2.1	2.6	2.2	
Other countries	0.4	0.5	0.4	1.6	1.1	1.3	0.8	0.8	0.7	0.8	



# Design Influences Production

Shown to Be Real Starting Point of Efficient Manufacture—Tap Drill Sizes Discussed at Mechanical Engineers' Meeting

**T**HAT the problem of production starts back on the drawing board, the real starting point for efficient manufacture being the design of the product itself, was comprehensively shown in a paper presented by Earle Buckingham, professor of mechanical engineering, Massachusetts Institute of Technology, Cambridge, Mass., at the regional meeting of the American Society of Mechanical Engineers, held in Providence, May 3-6.

Professor Buckingham's paper, under the title of "The Influence of Design on Production," was one of eight papers presented at two sessions held under the auspices of the society's machine-shop practice division and the National Machine Tool Builders' Association. Other papers at this session are abstracted in the following report, and elsewhere in this issue.

## Manufacturing Design Determines Economies

The problem of production was divided by Professor Buckingham into two phases: The creating and installing of production methods for a new commodity; and the refinement and improvement of methods on a commodity already in production. In discussing the first phase, he said:

"Those of us who have had experience in trying to start production on a new model will recall the many false starts, changes in method, changes in design of the product, hurried provision of makeshift facilities to perform some operation that had been overlooked, and the almost endless petty problems that constantly arose to delay progress. It is a common experience to have it take from several months to a couple of years for the production of a new product to function smoothly. The reason for this is that we did not start back far enough in our drawing board work.

"The first or experimental model of a new mechanism is usually made by the cut-and-try method and little attention is paid at this point to future manufacturing design. The main object is to make the mechanism perform properly, regardless of the exact design. . . . Before manufacturing is begun, what may be called a production or manufacturing design should be perfected, which will modify the inventive design where necessary so as to permit its economical production on a large scale. It is the manufacturing design which largely determines the expense or economy of production of a given commodity, and thus directly affects its success or failure."

## Several Important Purposes of Manufacturing Design

The manufacturing design, it was pointed out, has several purposes to fulfill. It must be such that all necessary production operations can be performed readily on the manufacturing equipment that will be available. The manufacturing designing should be done in cooperation with the production department when the selection of manufacturing processes is being made. Frequently a minor change in size or shape of some part of the product makes possible a material saving in the cost of production.

Another primary object of the manufacturing design should be, it was said, to simplify as much as possible the construction of the proposed products. Simplicity is always a source of economy. This holds true for both the product itself and the manufacturing processes used to make it.

Arrangement of the mechanism so that a high order of accuracy is required on as few surfaces as possible, was given as another important function of the design. In almost every mechanism there are a few critical

and essential surfaces and interrelations, but the large majority of them are relatively unimportant in this respect. The manufacturing design should always strive to keep the need of severe requirements to a minimum.

A further important function is the development of a design that can permit liberal clearances, it being stated that clearances should be one of the principal considerations in developing the production design. The aim should be to allow the greatest possible amount of clearance between companion parts. The more the design lends itself to this end, the greater the variation of tolerances that can be permitted, and hence the greater the economy of production, also the greater the degree of interchangeability of parts that can be secured.

An important consideration in establishing the manufacturing requirements of any commodity should be to determine and define the few essential requirements first, and let the non-essentials take care of themselves later, said Professor Buckingham. The essential requirements need and should receive the greatest attention. This, however, is seldom done.

Arrangement of the mechanism so that as many units as possible can be made independently was given as another object of the manufacturing design. Both the assembling and final testing of the completed product are greatly facilitated if the design permits such unit-assembly construction.

A still further object of the manufacturing design should be to standardize the sizes and shapes of as many machined surfaces as possible, and reduce their variety to a minimum. This practice was stressed as having a very direct influence on the economy of production. In addition, as many of the smaller parts as possible, such as screws, studs, pins, etc., should be standardized as complete units, keeping the variety of similar parts to a minimum. All of this shop standardization should endeavor to use as many of the general engineering standards as possible.

## Essential Features of Component Drawings

Some of the essential features of the detailed component drawings of the product to be manufactured were also outlined by Professor Buckingham. The main object of component drawings, it was pointed out, is to furnish the production departments with the information they need in order to manufacture the product. It is necessary to have these drawings as detailed and complete as possible. If careful thought is given to the component drawings, much time and effort will be saved later in the shop; if they are neglected, all future work will suffer. A large percentage of the mistakes made in the manufacturing department may be traced, it was said, back to improper component drawings. Rules for dimensioning of the drawings were given in the paper.

## Steps in Selecting Manufacturing Processes

Steps in the selection of manufacturing processes were also outlined. The first step is the making up of a detailed operation list for each part; and the second, the making of an estimate of the time required to perform each operation. The latter serves two purposes: It enables an estimate to be made of the probable cost of production of the new product; and it enables the amount of equipment required for any given rate of production to be determined.

After the machines and methods to be employed have been selected, the next step toward production is the design of the special tools, jigs and fixtures



for each individual manufacturing operation. A number of general principles to be followed in the design of fixtures are included in the paper.

In discussing the second phase of production problems, the refinement and improvement of production methods on a commodity already in production, it was pointed out that, whereas the development of methods for manufacturing new products will be met only occasionally, the problem of refining and improving existing methods is always with us. In addition to this, in the course of time new demands are made of different classes of commodities, and furthermore new manufacturing processes are developed. In some cases these new processes can be used without any change in the design of the product, but in other cases considerable redesign is necessary in order to obtain the full benefits of the new production process. Thus the design of the product and the production methods must always be studied concurrently.

#### Simplification Practiced by Maker of Rolling Mill Equipment

T. H. Nye, engineer, Morgan Construction Co., Worcester, in discussing Professor Buckingham's

paper, called attention to the results of simplification of design of many products of the Morgan company. His discussion showed that simplification and standardization is beneficial in shops making a variety of products, as well as in those operating on a mass production basis.

Two classes of investigation have been pursued, one a study of units such as roll housings, pinion housings, roller tables, shears, and gas producers. Roll housing units have been reduced from approximately 50 to 25, pinion housings from 30 to 15, roller tables from 25 to 6, and the sizes and types of shears 50 per cent. The work is being continued. Stock details used in machines have been studied, and as a result 15 per cent of the diameters and lengths of rough bolts have been eliminated. The number of sizes of shafting used in roller tables and other places in quantity was reduced, writing off 66 per cent from the stock list. Items selected at random like shafting collars, foundation bolts, rivets, drill and reamer sizes, cotter pins, details for stair construction, have received attention as a beginning of simplification, with consequent reduction in cost of drawings and of production.

## Develops Practical Tap Drill Chart for Production Purposes

THE development of a practical tap-drill chart for production purposes for commonly used materials was outlined by A. C. Danekind, General Electric Co., Schenectady, in a paper on "The Development of Tap Drill Sizes." Significant reduction of tap breakage was said to result from this investigation. Proper drill sizes to produce approximately 75 per cent of thread have been determined, and the results were shown by means of graphs and charts.

A correct tap-drill chart, it was pointed out, is very essential to good manufacturing. Too often the choice is left to machine operators who have memorized through continual use sizes satisfactory to them. However, if a canvass were made of the recommendations of different operators, much difference of opinion would be revealed. In the General Electric Co. plants, it was said, conditions were found exactly as they are in the general run of manufacturing concerns. Tap-drill charts were placed about most of the tool rooms as a guide for the men in selecting the proper tap drill. Inquiries were made of the various plants pertaining to the use of the tap-drill charts. Each plant reported the use of a chart of its own creation. Many times no two charts would agree on the proper drill for a particular tap.

Investigation of taps broken off in work in process was said to show that the lack of a more nearly correct tap-drill chart caused a large number of breakages through the specification of undersized tap drills. This was especially true of machine-screw sizes.

A study of the various charts now in existence was said to show that the sizes listed are generally too small for production purposes, especially those up to  $\frac{1}{8}$  in. This, the author assumed, was due to the fact that the sizes listed are calculated in most cases to produce a thread of approximately 75 per cent, but without consideration of the widely different characteristics of the materials to be tapped. In some cases cast iron is classed with steel, wrought iron and copper, and while it is an accepted fact that the latter three materials have a tendency to "spin-up" when tapped, such is not the case when a sand-cast material is considered. It was said that on all sizes larger than  $\frac{1}{8}$  in., 75 per cent of thread is ample for all general purposes, provided a good flank bearing is obtained between mating parts. This means threading tools free from excessive lead errors. It was stated that practically no additional strength is obtained from an increase of several percentage points over 75 per cent, and lead errors are much more troublesome to deal with, due to this fullness of thread.

Any tap-drill chart, it was said, can be offered only as a guide, which is due to the fact that tap-drill sizes must vary with the thickness of materials to be tapped.

The only practical way of determining the proper sizes for tap drills for any commonly used material is by physical research. Here particular attention can be devoted to the elimination of any inaccuracies which may appear in production tapping. Carefully tested taps can be used and drilled holes checked carefully before being tapped. In this way results can be obtained which can be used as a specific guide in the developing of a practical tap-drill chart. Wherever metal thinner than three-fourths of the tap diameter or thicker than  $1\frac{1}{2}$  diameters is used, a deviation must be made from the recommended chart.

Three graphs and two sample charts are shown in the paper. The first gives the tap-drill sizes for National coarse series for machine screws, and is a comparative graph showing relation between theoretical tap-drill sizes and actual results obtained due to "spinning up" effect on drawn sheet copper, aluminum and steel. The second graph shows the tap-drill sizes for G. E. standard machine screws, and the third graph the sizes for very fine series. The latter graph shows the actual locations from tap-drill sizes after the spinning up effect has been taken into consideration; for drawn or rolled copper, steel and aluminum. The sample charts give proper tap-drill sizes to produce approximately 75 per cent of thread as established by physical tests.

#### Specifications Suggested for Small Springs

Specifications for the manufacture of springs and for spring materials were discussed in a paper on the "Specification and Control of Mechanical Springs" by Joseph K. Wood, consulting engineer, New York. For the proper control of spring action in machine design, said Mr. Wood, adequate specifications must be provided.

The paper includes a list of specifications for heavy springs and a tabulation of the features of those specifications. Specifications for small springs, it was pointed out, are few in number and have not been given much publicity. Mr. Wood suggested a form of specification for such springs, and illustrated his discussion by an hypothetical case. The use of a "load-deflection sector" in place of a load-deflection curve is recommended. By encouraging engineers when designing springs to think in terms of load-deflection sectors instead of curves, said Mr. Wood, we will be training them to control the over-all condition, including manufacturing methods and commercial limitations, instead of narrowing themselves down to the mere technical requirements. A sample specification for a helical spring, drawn up with this general principle in mind, is given in the paper.

An address by Col. T. C. Dickson, commanding

officer Watertown Arsenal, on "Making of Guns by the Cold-Working Process," was received with interest. He described the rapid and economical production of guns by a method in which centrifugally cast hollow gun bodies are heat-treated and bored, the bore being subsequently enlarged by hydraulic pressure. Two steels developed for guns made by this process were said to have shown a big improvement over those formerly used. The cold worked guns withstand a pressure of over 90,000 lb. per sq. in. at the bore, which compares

A large amount of material showing past and existing practice has been collected. Tests have been conducted to determine the comparative strength of bolts and slots, in order that the proportions submitted might be suited to practical needs. That the report of the T-slot committee might not be burdened with the records of the latter investigation, but might instead be concentrated on the actual proportions to be adopted, that report was supplemented by a separate record of the underlying investigations on which it

## Record Attendance at Regional Meeting of Mechanical Engineers in Providence

WITH a registration of more than 725 the meeting of the American Society of Mechanical Engineers, held in Providence May 3-6, is credited with being the largest regional meeting in the history of the society.

In addition to the two machine-shop sessions, reported elsewhere in this issue, technical sessions were devoted to industrial education, industrial power, central station power, textile and wood industries.

Among the companies opening their plants for inspection during the meeting were the Brown & Sharpe Mfg. Co., the Grinnell Co., Inc., the Narragansett Machine Co., and the Providence Gas Co.

The social program was extensive. All events were unusually well arranged and were well attended. As at the last meeting of the society in Providence 35 years ago, a clambake was one of the features, it being held at Rehoboth, Mass. A luncheon was held May 4, with the Chamber of Commerce Committee of 100, and an informal dinner in the ballroom of the Providence-Biltmore Hotel on the evening of May 5. At the

latter function S. H. Libby, General Electric Co., Bloomfield, N. J., was the principal speaker. An extensive program of luncheons, teas and other events was also arranged for the ladies attending the meeting.

The last day of the meeting, May 6, was devoted to a visit to the naval training and torpedo stations at Newport, R. I. More than 500 registered for this trip, which was taken by automobile. A special exhibition drill was given by the apprentice seamen brigade at the naval station. Luncheon was served at the "House That Jack Built" at the naval torpedo station and was followed by addresses, one of which, by Lieu. Com. J. L. King, was on "The Mechanism and Engineering Features of the Torpedo." About 200 of the party were taken by the destroyer Putnam to the torpedo range on lower Narragansett Bay to view the firing of torpedos, both from an aeroplane and from the testing barge. The several machine shops and testing departments at the torpedo station were inspected and a short tour of Newport preceded the return to Providence.

with about 47,500 lb., the proof test of guns made by former processes. Slides picturing various details of the process were shown.

### Standard for T-Slots Formulated

Data relating to the standardization of T-slots was given by L. D. Burlingame, industrial superintendent of the Brown & Sharpe Mfg. Co., at the machine-shop practice session held May 4.

The importance of standardization of the holding elements of machine tools, such as T-bolts and slots, has been widely recognized and a sub-committee has been at work for several years on the problem of providing an acceptable standard for T-slots. A standard has now been formulated by the committee.

is based. This supplementary material was given in the paper presented by Mr. Burlingame.

This paper, which was presented under the title of "Basis for Determining the Proportions of Standard T-Slots," takes up the factors determining the strength of T-slots and outlines the method of investigation. The results of tests of T-bolts in milling machine tables of hard iron and tests made to ascertain the comparative strength of T-slots milled in soft and hard iron are given. A section is devoted to tests for T-nuts, and the results of a questionnaire sent to a selected list of makers and users of machinery having T-slots are summarized. The proposed American standard is also compared with the practice in Great Britain and Germany.

## Bronze Tablet for Commemorating a No Accident Record Is Awarded

The accompanying illustration is of a bronze tablet recently awarded the operating division of the Carnegie Steel Co., known as the City Furnaces, of which L. E. Riddle is general superintendent, in recognition of the completion of 221 days without a lost time accident. This is a record for Carnegie plants. The tablet, 18 x 24 in. in size, will be placed on the general office building of the Isabella furnaces in Etna, just outside the city limits of Pittsburgh.

The period covered by the record was from April 25 to Dec. 3, 1925.





# Voices Opposition to Trust Laws

## Southern Metal Trades Association Advocates Amendment Permitting Closer Cooperation Among Business Men Without Agreements

**O**PPPOSITION to the Sherman and Clayton anti-trust laws in their existing form was recorded in the form of a resolution adopted at the annual convention of the Southern Metal Trades Association at Macon, Ga., May 5 and 6. The resolution favored an amendment which would permit "closer cooperation among business men generally, while forbidding agreements which are calculated to produce monopolies." It was the opinion of the association that these laws have forced manufacturers and merchants against their will to a state of "ruthless, uneconomic and wasteful competition among themselves, which has resulted in vast damage to all branches of our trade and commerce, obviously enhancing costs of distribution and creating a situation not paralleled in any civilized country."

Copies of the resolution will be sent to the President of the United States, Speaker of the House, president of the Senate and to members of Congress, urging that consideration be given to legislation that will ameliorate present conditions.

The association also adopted a resolution registering its opposition to the metric system, which is now before Congress in the form of a bill to make it the standard for weights and measures in the United States.

### George B. Cocker Elected President

George B. Cocker, Gastonia, N. C., was elected president, succeeding W. C. Trout, Lufkin, Tex. Other officers elected were: John S. Schofield, Macon, Ga., first vice-president; W. E. Dunn, Jr., Atlanta, Ga., re-elected secretary; J. L. Cox, Atlanta, re-elected treasurer. State vice-presidents include J. T. Belding, Georgia; W. D. Tynes, Alabama; H. E. Ray, Mississippi; N. R. McCruston, North Carolina; T. H. Liddell, South Carolina; Charles R. Law, Louisiana; E. H. Trick, Texas; W. E. Thomas, Virginia; R. O. Collins, Florida; F. I. Brown, Arkansas. G. I. Gelden, Georgia, and A. E. Hartwell, Texas, were elected delegates at large. The retiring president, Mr. Trout, was presented by the association with a silver service.

### Code of Business Ethics Adopted

The code of business ethics, drawn up a year ago, was adopted and is printed in another column.

The first session of the convention opened at the Hotel Dempsey Wednesday morning, May 5. Following an address of welcome by Judge Malcolm D. Jones, of Macon, and a response by G. F. Meehan, president of the Ross-Meehan Foundries, Chattanooga, Tenn., the report of the secretary and treasurer was read by Secretary William E. Dunn, Jr.

The opening address of the meeting was delivered by T. Rad Turner, chairman of the board of directors of the Macon National Bank, who spoke on "The Bank and Its Relation to Industry." Mr. Turner was followed by William J. Barrett of the Metropolitan Life Insurance Co., New York, who in his address on "Foundry Management and Its Effect on Cost," stressed the need of a cost system for the modern foundry.

### Importance of Knowing Costs

"Too often," he declared, "the foundry manager finds himself compelled to borrow money at the close of the year in order to stay in business. This, if continued, can lead to only one of two things. Either the firm he sells to becomes tired of the relation and puts in its own foundry, or he loses control of his business. The man who would stay in the foundry business of today must know his costs. And the only way to know them is to install a cost accounting system."

"The effect of a cost accounting system upon the management of a foundry can be illustrated by methods

followed in two plants I recently visited—both about the same size.

"In one plant, the materials for charging the cupola were hauled by wheelbarrow a distance of 200 yards over a dirt roadway. There they were dumped on the loading platform, where the charges were mixed. And it took seven workmen to perform the operation. In the second plant unit charges were made up in the yard and placed on skids. A concrete runway led to the loading platform. A tippie transferred the charge to the cupola, and the operation required only three men.

"What made the difference? The second plant installed a cost system and set about rendering this department more efficient.

"An expensive cost system is not necessary. Two or three men, employing a simple cost system will do the work. But some kind of a cost system is essential if the foundry is to succeed. Managers have got to stop guessing and know their costs."

John S. Schofield, president J. S. Schofield's Sons Co., Macon, Ga., presented a paper on "Costs." He urged foundrymen to stop paying so much attention to the other fellow's price and to pay more attention to their own costs.

"I don't know exactly what price cutting means," said Mr. Schofield. "There is no 'cut price' that I know of. Selling below your own cost of production is the nearest approach to price cutting that I know of and I don't believe that is a very clear definition. However, I do say that the foundryman should know his cost of production. He should figure out what he considers a fair profit over and above that cost. And—no matter what the other fellow does—he should hold to the selling price thus computed. For he can rest assured that the man who does not know his cost and sells below it will sooner or later come to grief."

### Testing Coke for Uniformity

"Refining Molten Cast Iron" was the subject of a paper by G. S. Evans, metallurgist for the Mathieson Alkali Works, Chicago, and "The Importance of Uniformity in Coke" was discussed by E. J. Rowe, of Adams, Rowe & Norman, Birmingham. Mr. Rowe spoke briefly of the new methods of making and grading coke, and urged foundry managers to test and study their coke more carefully with a view to getting what is best and most economical to use.

"The foundryman should test his coke for uniformity frequently," said Mr. Rowe. "I know plants in which the coke is tested two or three times a day. Why? Because the managers realize that uniform metal comes from uniform heat, and that uniform heat can be obtained only through the use of uniform coke."

Mr. Rowe predicted that the time was not far distant when coke would almost replace coal as a fuel.

### Importance of Modern Working Conditions

C. A. Harwick, Southern manager for the H. K. Ferguson Co., Birmingham, presented a paper on "Modern Foundry and Machine Shop Construction." He declared that while building expansion and improvement were often delayed because of the great cost, the time has come when the foundry owner must consider his building as a factor in economical production.

"A survey of conditions at the present time," said Mr. Harwick, "shows that the cost of building material has advanced only 10 per cent since the depression following the World War and indicates that now is an excellent time to plan and build for the future."

"Above all things, the man who builds now should plan for future expansion. An out-of-town location should be chosen, where land is cheap and where light and air are plentiful. The location of each department



should be studied, with the proper proportionate area devoted to each. Standard type buildings should by all means be used—buildings in which the column girders are punched to provide for expansion, with trusses capable of taking shafting or monorail loads, with column brackets to take light cranes, and so on. In particular, sanitary provisions should be carefully looked after in the foundry of the future. It should have 'V' monitor roofing to carry off the foul air. It should have sanitary toilets, floored and walled with indestructible material. It should have shower baths for the employees. A recent survey showed that 75 per cent of the employees at one foundry used the showers regularly. The plant of the future must care for its employees, for upon this care will rest its efficiency and its expansion."

Mr. Harwick urged foundrymen to use every care in designing expansions and new plants, pointing out that the proper design of the building is destined to play a larger and larger part in efficiency of production.

Russell Hunt, secretary and treasurer of the Sloss-Sheffield Steel & Iron Co., Birmingham, concluded the opening session with an address on "The South Awake," in which he showed that the South's greatest assets were its citizens.

At the conclusion of the session, delegates attended luncheons given by the Rotary and Kiwanis clubs of Macon and later visited the plants of J. S. Schofield's Sons Co. and the Taylor Iron Works.

The annual banquet was held at the Hotel Dempsey, with P. T. Anderson, president of the Macon Chamber of Commerce, as toastmaster and Dr. H. R. McKeene, executive manager of Greater Georgia, Inc., as principal speaker.

#### Motion Pictures Valuable in Selling Machinery

The second session of the convention opened Thursday morning, with a motion picture directed and screened by President Trout showing the Lufkin Machine Co.'s counterbalance for oil-well drilling. Mr. Trout told how he had devised the machine and had been unable to sell it at first because his salesmen could not explain it clearly to customers. Finally he hit upon the motion picture as the best method of showing how the device worked and took this along in selling it with instantaneous success. He suggested the motion picture as a profitable sales medium.

#### Safety Measures in Plants Urged

W. E. Small, president Georgia Casualty Co., Atlanta, in an address on "Safety of Employees in Business," said that "efficiency is short-lived if the human element in our plants is not regarded and safeguarded, and inefficiency along these lines offers a short step to insolvency. Under the workmen's compensation laws in most of our States, the company is held responsible for most of the accidents occurring to employees. At first these laws provided that, where the workmen were in a measure responsible for the accident, the employer could be absolved from blame, but the present tendency for workmen's compensation laws is to fix the blame more and more upon the employer in every case until now he is excused in some States only if the accident was willfully committed or the employee is of unsound mind.

"What can the employer do about it? He can see that his plant is a safe place in which to work, of course. He can throw every possible safeguard around his machinery.

"But this is not enough. It is estimated that fully 32 per cent of all accidents are due to the human element—to carelessness, ignorance, illness or some cause arising from the human and not the mechanical side of the equation.

"This means that the employer must consider his men as well as his machines in making his plant safe. Physical examinations before admission to work will help. No employee who is suffering from hernia, Bright's disease, tuberculosis or kindred diseases is in a normal condition and fit to be working in your plant. He not only endangers his own life but the life and limb of others working beside him.

"And that is not all. Physical examinations must take place at regular intervals, for a man may be well today and sick tomorrow, and it is useless to keep out those who are ill while retaining those in the organization who need treatment.

"Regular physical examinations, followed by proper treatment, form one safeguard against accidents. But above all, the employer must cease to deal with labor en masse and deal with his employees as individuals. He must know his men—know them by their first names if he can. He must know the conditions under which they live as well as he does those under which they work. Efficiency will not flourish in an atmosphere of fear. But it will come out remarkably in a plant where love is the keynote, where the employer knows and likes his men and where the men know and like their employer. Have a safety council. Teach improved practices. Weed out the physically unfit from your organization. Look after the health of those who are in it. Secure men of character as well as men of skill.

"Then, if you will know your men, you need not fear strikes, disastrous accidents, damage suits, or any of the evils that arise from the old and outworn 'don't care' attitude of the employer toward the employee."

Mr. Small's address brought out some discussion of the value of self-insurance and the part that employees should take in this insurance, and while there was a good deal of variation in the methods followed by different foundrymen, it was generally conceded that the manufacturer under the present laws could not pass this insurance on to the employee by taking a part or all of the premium out of his wages, but would be compelled to pass it on to the public as an addition to the cost of the finished product.

President Trout called upon each delegate to get up and discuss some phase of the industry that he thought the others would like to hear about. And this developed into the "high point" of the convention. For as man after man got up and told what he was doing and trying to do for his employees, it became more and more apparent that the manufacturers at the meeting were giving serious consideration to the labor question, trying to know the men personally, and looking after their employees in the proper manner.

As one delegate expressed it, "men can't be driven or frightened or fooled into working any more. They have to be loved into it. And the Christian method of winning through love can and does work in the foundry industry. It is about the only method that will work."

#### Code of Ethics, Southern Metal Trades Association; Adopted May 5, 1926

The members of the Southern Metal Trades Association subscribe to the following general rules to be applied in the conduct of their business:

1. In the conduct of our business and in our relations with our competitors, our customers and our employees, justice and fair dealing should characterize every transaction.
2. In the realization that higher business standards are to be attained through the education of our members, let each maintain an open mind toward all things which tend to better business practices.
3. Prove to our competitors that we are as sincere and honest in all matters as we could wish them to be.
4. Take no advantage of the ignorance of a customer, nor allow any employee or salesman to do so.
5. Make no estimates without knowing clearly all details connected with the work to be done, that there may be avoided any misunderstandings or disagreements with customers incident to "extra charges."
6. Hiring employees away from a competitor, or inducing them by other means to leave his service, must be recognized as a sure way to invite reprisal and a general demoralization of the local labor conditions. It is unquestionably the right of the workman to use all reasonable efforts to better his condition, but employers can do one another or the employee no greater wrong than virtually to become "bidders" for his services.

7. "A fair wage for a fair day's work" should be the thought in fixing rates of pay of our employees, having also due regard for general living conditions. Securing a fair profit on all work we do is doubly necessary—for the protection of the employer, and the just remuneration of the workman, that he may maintain himself under such proper living conditions as will conduce to good citizenship and good workmanship.

8. We should recognize that only by training all the apprentices which trade customs allow, can there be maintained a sufficient body of trained workmen in this industry, and that it is the duty of every employer to do his share in this most important work. Therefore, the selection of apprentices should not be left to chance, but rather be given the careful study of the employer himself, to the end that the industry be not harmed by the introduction of unsuitable or undesirable men.

When an apprentice is taken into the shop much care should be taken in seeing that he be properly

trained and given the opportunity to become a thoroughly proficient workman.

9. We desire to promote the metal trades business for the general good of the entire industry and the welfare of our country.

10. To refuse to pay bribes or "commissions" to buyers, purchasing agents or others who may thus be induced to place orders with us. Business so acquired is sure to develop undesirable characteristics.

11. We believe in publicity and research, the education of all branches of the industry to the highest standards, and in the dissemination of the proper knowledge of the economic uses of such material that enters into the production of all metal products.

12. And, finally, let the metal tradesman be ever diligent in business, quick to perceive the good and alert to repel the evil; ever mindful of the rights of others; as quick to take blame as to place it on others; courteous and considerate of others, and in every way a true American citizen.

## CAUSES OF DEFECTIVE CASTING

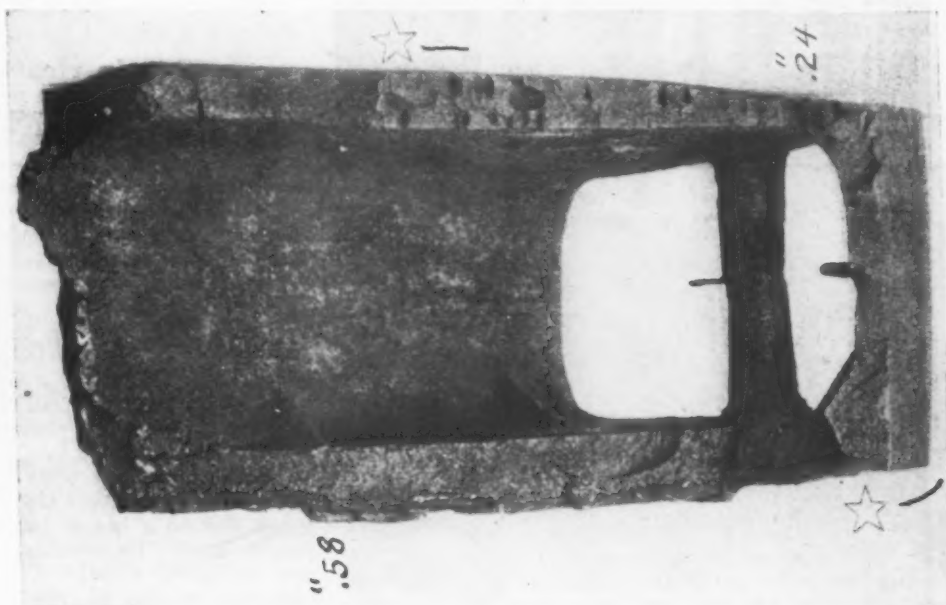
### Interstate Commerce Commission Report by Physicist Points Out Physical Errors in Truck Frame That Led to a Railroad Wreck

The Interstate Commerce Commission has published a report of its engineer physicist, Dr. James E. Howard, which cites a defective truck frame as the cause

primarily responsible, possibly not remotely accountable, for the fracture of this frame.

"This was a cored casting. The core was not set concentric with the ribs. There were variations in thickness of the ribs, ranging from a maximum of 0.58 in. to a minimum of 0.24 in. at the end fractured under the gondola car. At the opposite end, where fractured by a steam hammer, the thickness of the ribs ranged from 0.30 in. minimum to 0.64 in. maximum. This variation in thickness of the metal is correctable

Fractured Surface of Truck Frame; End Which Fractured Under Gondola Car. Preexisting fracture, section between stars. Remainder of fracture made at time of derailment



of a work train wreck on the Southern Railway near Rutherfordton, N. C., on Oct. 1, 1925, and goes into details as to how the defect in the casting could have been avoided.

Fracture of the frame occurred, it is stated, at the inner corner of the journal box jaw. The surface of the rupture presented two distinct phases, an earlier and progressive type of fracture for a part of the fractured surface, and the final stage at which time rupture was completed. The report says in part:

"The casting showed numerous blowholes in the inside rib. Blowholes exist in many if not in most steel castings. They are necessarily a source of weakness wherever found. At one place the blowholes represented nearly 100 per cent of the cross section of the rib of the frame. It is not held that blowholes were

in the foundry by the exercise of care in setting the cores.

"The direct cause of the fracture of the frame is attributed to error in the design, resulting in deficiency of metal at a vital place where working stresses attain maximum values.

"There is general knowledge of the fact that severe shrinkage strains are set up in steel castings, with the possibility of cracks forming at critical places. Such a condition is referred to as a 'draw' in a casting. Strains not relieved by actual separation of the metal are measurably diminished by annealing. This casting was doubtlessly annealed.

"Blowholes, thick and thin parts of the casting, were noticeable in this truck frame, but did not constitute leading factors in its fracture."

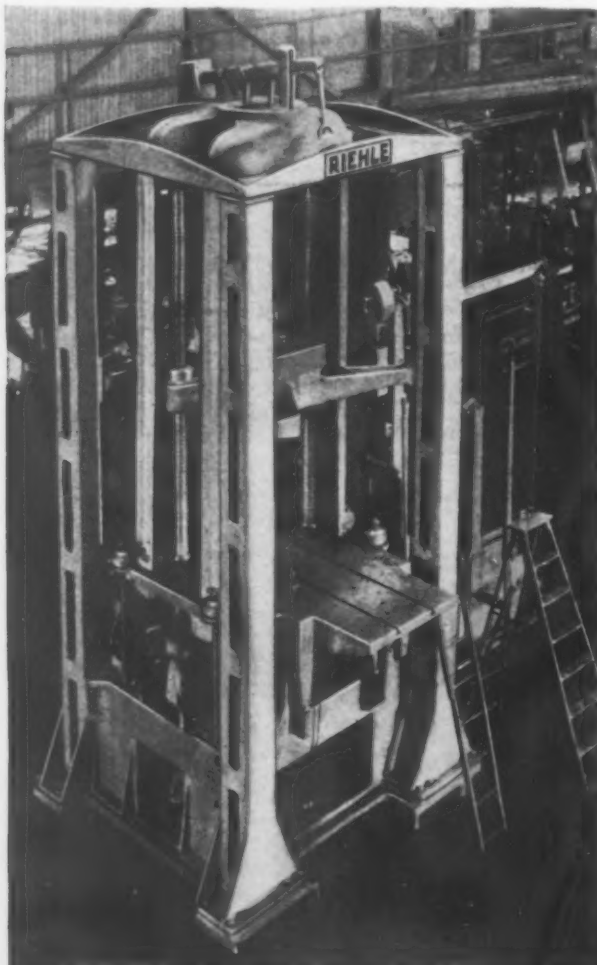


## UNIVERSAL TESTING MACHINE

**New Unit Made in Capacities from 2000 to 1,000,000 Lb. for Tension, Transverse and Compression Tests**

The Riehle Brothers Testing Machine Co., 1424 North Ninth Street, Philadelphia, has brought out a new line of universal, vertical, screw power testing machines, one of which, of 1,000,000-lb. capacity, is shown herewith.

In developing the new machines, which are of the three rotating "reversed screw" type, the company has retained the rotating screw feature of its previous de-



*Testing Machine of Three Rotating Screw Type for Making Tensile, Transverse and Compression Tests. The capacity is 1,000,000 lb.*

signs. With this arrangement no part of the machine projects below the base line, which is stressed as saving in foundation costs and as permitting the installation of the machine in many locations where otherwise it would be impossible. An example given is the installation of a 200,000-lb. capacity machine of this type on the second floor of a new laboratory in the River Rouge plant of the Ford Motor Co. In this case, the floor could not be cut nor foundation bolts used.

With the three pulling screws' feature of this design, the load of the machine is carried by each of the three screws. One of these screws has been placed on the center line of the machine, toward the front or weighing-beam, and the other two screws, spread equidistant from the center line, at the back of the machine. This arrangement is also stressed as providing maximum convenience in conducting and observing tests, since the operator is in full view of the specimen at all times, and other witnesses of the tests can make observations from any one of three points.

The gearing is arranged so that the single screw

placed at the front of the machine rotates opposite to the other two screws, thus neutralizing the tendency for the moving head to shift at time of reversing. In all of the newer designs of this machine the space between the pulling screws has been widened so that there is more table room and additional space for the placing of specimens and instruments for making observations.

The 1,000,000-lb. capacity machine here shown has been installed recently in the laboratory of the Ohio State University, Columbus, Ohio, for the making of tension, transverse and compression tests up to full capacity. The opening between screws is 38 in. but a machine of the same capacity having a clear space of 74 in. between screws is being built for a maker of steel castings. The four guide columns are bolted to the base-plate of the machine and held together by the struts at the top. Against the inside corners of these columns shoes travel, these shoes being held at the ends of arms cast integral with the moving head to prevent shifting of the head under heavy compression or transverse testing. The top, or weighing head, is held on three columns, which parallel the screws and provide a large opening between the screws on three sides.

The main bracket of the machine carries the change gears, and rests directly on the foundation, providing a long base line. The starting, stopping and reversal of the moving head are accomplished by means of a single hand-lever. The load on the specimen is indicated on a micrometer dial screw beam, up to full capacity of the machine, without the use of end weights. The poise is propelled by a screw rotated by bevel and spur gears connecting to handwheel on the beam stand. An automatic attachment can be provided for propelling the poise, and an autographic recorder can be used to produce a stress strain curve. The lever weighing system is made of steel castings throughout.

## Patent Office Operations in 1925 Result in Heavy Deficit

During 1925 the United States Patent Office received 108,817 applications of all kinds, of which 84,525 were for patents. The total number of patents granted was 46,450, compared with 42,594 in 1924. Patent office receipts in 1925 at \$3,411,734, exceeded the previous high record—that of 1924, with \$3,152,793. Of all the patents issued, 5347 were granted to citizens of foreign countries, Germany with 1296 and England with 1225 being by far in the lead. In this connection it is pointed out in Commissioner Robertson's report that more than twice as many Canadian patents in 1925 were issued to American citizens than to citizens of Canada, and of all other countries in the world, combined. American citizens received 69 per cent of all the patents issued by Canada.

Although patent office receipts in both 1924 and 1925 were successively the highest ever obtained, both years showed a heavy deficit in the operation of the patent office. Expenditures in 1925 were \$3,760,480 and in 1924, \$3,561,395. Deficits from operations amounted in 1925 to \$348,746 and in 1924, to \$408,602. Except for 1923 and 1918, when smaller deficits were made, these were the only cases of deficits in more than 60 years. The total number of patents issued by the United States up to the end of 1925 was 1,568,039. This compares with 3,418,205 patents issued by all the other countries of the world up to the end of 1923—the latest date when figures for all countries are available.

## Heavy Production of Electric Current

March send-out of electric power by public utility power plants in the United States is reported by the Geological Survey at 6101 millions of kwhr. This is close to the high record figure of January, which was 6121 millions. It shows a sharp increase over February's total of 5598 millions. The February total represented a higher rate per day, however, than either March or January.

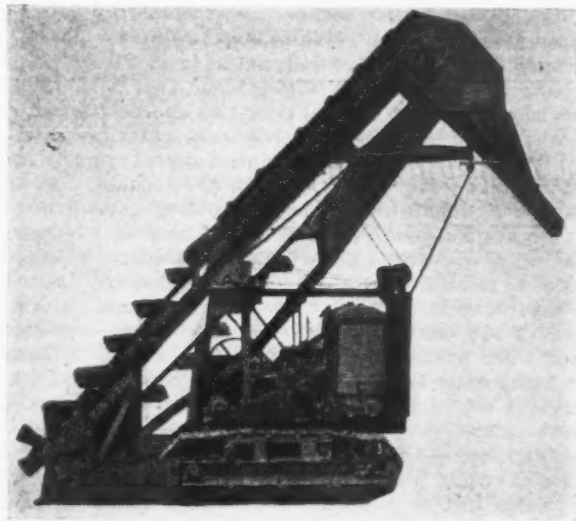


## Crawler Loader for Handling Sand and Other Material

The handling of sand, gravel and similar materials at the rate of 1½ cu. yd. per min. or 140 tons an hour under average conditions, is claimed for the crawler loader here illustrated, which is being marketed by the Link-Belt Co., 910 South Michigan Avenue, Chicago.

The machine is designed for operation by one man. It is made up of four units, the elevator, the chassis, the power plant, and the crawler. The unit system of construction has been employed, and adjustments and repairs may be made conveniently.

The loader is arranged so that it can travel forward and reverse; and turn right or left when traveling in either direction. The starting, turning, and stopping of the machine is controlled by two hand levers, and brakes are applied automatically when stopping. The



*Sand and Other Material Is Handled at the Rate of 1½ Cu. Yd. Per Min. The machine is designed for operation by one man*

elevator is controlled by separate hand lever, which operates a steel clutch, and disengages automatically when machine is started in reverse.

The buckets used have reinforced edges and are spaced closely enough, on double strands of malleable iron and steel chain, to assure steady delivery of material to the chute at the head of the elevator—the principle involved being that close spacing of buckets permits a lower speed of the elevator, with consequent less wear of parts. The head and foot sprockets are of manganese steel cast in two parts and clamped on hexagonal steel shafts.

The chute at the head of the elevator is of the swiveling type and can be controlled from the operator's platform. The feeder consists of manganese steel paddles, bolted to the hexagonal steel foot shaft. Feeder adjustment and collapsing mechanism are both controlled by a handwheel within reach of the operator. The chassis is built of heavy angles, plate and channels, riveted together.

The power plant is a gasoline power unit of 30 hp. at 1200 r.p.m., equipped with a governor; or electric motor equipment to suit the conditions. The truck transmission provides three speeds, 33 ft. or 66 ft. per min. in the forward direction and 29 ft. in the reverse. The drive from the engine to the machinery housing, and the drives from the latter to the crawler, are by means of roller chains, running on steel sprockets, etc. The drive to the elevator is composed of detachable links, with heat-treated side bars, case-hardened steel pins and bushings, and steel rollers.

The crawler is of riveted channel and plate construction. The design of shoes and sprockets is said to provide self-cleaning of the crawler traction tread.

## Industrial Research at the Mellon Institute

Edward R. Weidlein, director Mellon Institute of Industrial Research, Pittsburgh, told of the administration of such an institution in an address before the American Association for the Advancement of Science at a meeting in Kansas City. The general absence of scientific research methods in chemical technology led, in 1906, to the formulation of the industrial fellowship system of Mellon Institute. This system has not only aided in arousing the interest of American manufacturers in research, but it has appealed to their imagination and their intellect. As a result, the research department today is the rule rather than the exception in industrial organizations. Some of the results of the experiments were given in detail in the address.

In the annual report of the institute for the fiscal year ended Feb. 28, the number of fellows active in the work is given as 94, compared with 91 in the preceding year. Both these figures are higher than any which went before. The number of fellowships corresponding with this number of workers was 54 in each of the two years—again higher than in any preceding year. The total sum available for research in the fiscal year 1926 was about \$525,000, compared with \$475,000 in 1925 and smaller sums in earlier years.

## Vertical-Capstan Electric Car Spotter

Compactness is a feature of a vertical-capstan motor-driven car spotter, or puller, which has been placed on the market by H. W. Caldwell & Son Co., 1700 South Western Avenue, Chicago. The machine is entirely self-contained and, in addition to pulling and spotting cars, is adapted for use in moving materials in steel mills, foundries and on docks. Two sizes of the machine are available, the smaller being rated as moving one, two or three cars at the rate of 40 to 60 ft. per min. and the larger as moving from three to six cars at 26 to 42 ft. per min.

The vertical capstan has a working radius of 360 deg. The capstan shaft is provided with a long upper bearing to take the pressure from the rope pull and a



*From One to Three Cars Are Moved at Rate of 46 to 60 Ft. Per Min. by the Smaller Machine*

large flange is provided at the lower end of the capstan, this being claimed to reduce the bending moment of the shaft. The drive of the capstan is through a cut steel pinion on the motor to a cut cast iron spur gear on the worm shaft. The worm is of steel, hardened, and is integral with the shaft, which is mounted on roller bearings. A ball thrust bearing takes up the end thrust. These bearings are mounted in a cast iron frame which is bolted to a cast iron center, and there is a bronze thrust washer between the hub of the worm gear and the lower bearing of the vertical shaft.

Automatic lubrication is provided, the gears operating in two oil reservoirs. Three pet cocks permit regulation of the oil level. The upper bearing of the vertical shaft is lubricated from a grease cup.

# Europe Gains Little From Strike

German Mills Expect France and Belgium to Profit by Franc Depreciation—  
Polish and Czechoslovakian Markets Firmer

(By Cable)

LONDON, ENGLAND, May 10.

**B**USINESS is paralyzed by the general strike. Pig iron production has been generally suspended but stocks are low and prices firm. A few manufacturers are carrying on with reduced staffs, but the total volume of operations is very small. Tin plate mills are idle, but some business for July-September shipment

has been taken at 19s. 6d. per base box f.o.b. Makers of galvanized and black sheets are not quoting. British prices are nominally unchanged.

Continental markets have been disorganized by the British strike and business is virtually suspended, but prices are further weakened by depreciation of the franc. Reports from Germany state that the Ruhr Steel merger has been completed with a capital of 800,000,000 m.

## British Strike Unsettles German Market —France and Belgium Expected to Profit Most

(By Radio)

BERLIN, GERMANY, May 10.

The British strike has had no visible effect on the German iron and steel business. No increase in export orders is so far reported and on the Bourse steel securities are even weaker as a result of the belief that should the strike continue France and Belgium, aided by further exchange decline, will gain England's share of export markets.

Domestic and export prices are unchanged. Rationing of production at 65 per cent of capacity continues. The Polish and Czechoslovakian steel markets are reported firmer as result of the strike.

Loading of Ruhr coal for German coast districts, which normally receive a large percentage of British coal, has increased greatly, but the general effect of the strike is unsettling for German business.

that it is exceedingly difficult to determine the current market price of any product. Buying continues to diminish, consumers seeking lower prices as the franc decreases in value. While export prices quoted in pounds sterling can be reduced as a result of the exchange situation, makers point out that a downward revision could not be maintained as depreciation of the franc increases the cost of their raw materials.

Prices today apparently depend almost entirely upon the tonnage that mills have on their books. Makers with well-filled order books are holding quite firmly to original quotations, while others in need of business to maintain operations are willing to consider concessions, even to meeting the price ideas of the buyers. Foreign competition is stronger than for some time. German sellers are offering early shipment on most products and their prices for export are low. French mills are in many cases seeking business at any price and seldom present much resistance to the pressure of buyers for lower prices.

**Pig Iron.**—Unlike the steel markets, pig iron continues strong with slight upward revisions of price. Foundry iron to domestic consumers is quoted at about 410 fr. per metric ton, delivered, about \$14.65. Phosphoric foundry iron is quoted up to \$16.15 per ton, delivered. The available supply is small and domestic and foreign demand continues large. Medium phosphorus foundry is quoted for export at about £3 12s. per metric ton (\$17.65), f.o.b. Antwerp, but German prices on this grade are slightly lower. French hematite is being offered to Belgian buyers at about \$17.40 per metric ton, delivered Antwerp.

**Semi-Finished Material.**—Although available sup-

## Belgian Prices Reduced as Franc Declines— French and German Competition Keen—Pig Iron Firm

ANTWERP, BELGIUM, April 24.—Continued depreciation of the franc is increasing the demoralization of the iron and steel markets. There is such a wide difference in quotations of various mills from day to day

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.86 per £ as follows:

Durham Coke, del'd..	£0 18½s.		\$4.50	
Bilbao Rubio ore†...	1 1	to £1 1½s.	5.16	to \$5.19
Cleveland No. 1 fdy...	3 12½	and 3 13*	17.62	and 17.74*
Cleveland No. 3 fdy...	3 10	and 3 10½*	17.01	and 17.13*
Cleveland No. 4 fdy...	3 9	and 3 9½*	16.77	and 16.88*
Cleveland No. 4 forge	3 8	and 3 8½*	16.52	and 16.65*
Cleveland basic .....	3 10	and 3 10½*	17.01	and 17.13*
East Coast mixed....	3 16½	to 3 17	18.59	to 18.71
East Coast hematite..	3 16	to 3 16½	18.46	to 18.58
Ferromanganese .....	15 0		72.90	
*Ferromanganese .....	14 0		68.04	
Rolls, 60 lb. and up...	6 15	to 7 5	32.80	to 35.24
Billets .....	6 0	to 7 10	29.16	to 36.45
Sheet and tin plate				
bars, Welsh .....	6 5		30.38	
Tin plates, base box...	0 19	to 0 19½	4.62	to 4.73
Black sheets, Japanese				
specifications .....	13 10	to 14 0	65.60	to 68.04
Ship plates .....	7 0	to 7 10	1.52	to 1.62
Boiler plates .....	9 0	to 11 0	1.95	to 2.39
Tees .....	7 5	to 7 15	1.57	to 1.68
Channels .....	6 10	to 7 0	1.41	to 1.51
Beams .....	6 5	to 6 15	1.35	to 1.46
Round bars, ¾ to 3 in	7 12½	to 8 2½	1.65	to 1.77
Steel hoops .....	10 10	and 11 0*	2.28	and 2.39*
Black sheets, 24 gage	10 15	to 11 0	2.33	to 2.39
Galv. sheets, 24 gage	15 5	to 15 10	3.30	to 3.36
Cold rolled steel strip,				
20 gage .....	18 0		3.91	

\*Export price.

†Ex-ship, Tees, nominal.

## Continental Prices, All F. O. B. Channel Ports

Foundry pig iron:(a)				
Belgium .....	£3 5s.	to £3 6s.	\$15.80	to \$16.04
France .....	3 5	to 3 6	15.80	to 16.04
Luxemburg .....	3 5	to 3 6	15.80	to 16.04
Basic pig iron:(a)				
Belgium .....	2 19	to 3 0	14.33	to 14.58
France .....	2 19	to 3 0	14.33	to 14.58
Luxemburg .....	2 19	to 3 0	14.33	to 14.58
Coke .....	0 18		4.37	
Billets:				
Belgium .....	4 5	to 4 7	20.65	to 21.14
France .....	4 5	to 4 7	20.65	to 21.14
Merchant bars:				
Belgium .....	4 16	to 5 0	1.05	to 1.08
Luxemburg .....	4 16	to 5 0	1.05	to 1.08
France .....	4 16	to 5 0	1.05	to 1.08
Joists (beams):				
Belgium .....	4 14	to 4 15	1.03	to 1.04
Luxemburg .....	4 14	to 4 15	1.03	to 1.04
France .....	4 14	to 4 15	1.03	to 1.04
Angles:				
Belgium .....	5 2	to 5 4	1.12	to 1.15
½-in. plates:				
Belgium .....	5 17	to 6 1	1.29	to 1.33
Germany .....	5 17	to 6 1	1.29	to 1.33
¾-in. ship plates:				
Belgium .....	5 7	to 5 9	1.18	to 1.20
Luxemburg .....	5 7	to 5 9	1.18	to 1.20
Sheets, heavy:				
Belgium .....	6 3	to 6 4	1.35	to 1.37
Germany .....	6 3	to 6 4	1.35	to 1.37

(a) Nominal.



plies are not large at present, domestic consumers are refraining from purchases and, with the rate of production large, a sizable surplus may appear on the market before long. The active demand of recent months from British consumers has disappeared as a result of the strike, but this does not represent a serious loss as the prices offered by the British consumers were usually too low to interest Belgian mills. Billets of Thomas grade are generally quoted at about \$21.10 per metric ton, blooms at \$19.60 per metric ton and slabs at \$22.05 per metric ton, all f.o.b. Antwerp.

**Finished Material.**—The depreciation of the franc has apparently affected this market more than others. Business is almost at a standstill except for occasional sales by mills willing to meet consumers' price ideas to avoid drastic curtailment of their operations. Such

reductions are generally occasioned by the keen competition from German and French sellers, which in addition to lower prices are offering early deliveries. While the depreciation of the franc would normally permit the increase of prices to domestic consumers, demand is so small that mills have been unable to advance and in some cases have had to decrease their quotations. For export, bars are quoted at £5, but as low as £4 19s. per metric ton (\$24.25), f.o.b. Antwerp, has been accepted. A similar situation prevails on beams, which are being sold for export at £4 14s. to £4 14s. 6d. per metric ton (\$23 to \$23.15), f.o.b. Antwerp. Angles are held at about £4 18s. (\$24), channels £4 19s. 6d. (\$24.40), and reinforcing bars at £5 8s. (\$26.45), f.o.b. Antwerp. Steel hoops are quoted at about £6 10s. (\$31.85), f.o.b. Antwerp.

## GERMAN BUSINESS UNEVEN

### Foreign Demand for Wire and Agricultural Machinery Good—Otto Wolff to Control Most of Tin Plate Sold

BERLIN, GERMANY, April 27.—No further progress toward international regulation of the steel industry is reported. Negotiations are continuing for the inclusion of the Saar steel works in the German Raw Steel Syndicate, but agreement has not yet been reached. The Western Steel Corporation has not yet been officially formed. German mills are becoming somewhat pessimistic about the possibility of forming international syndicates or cartels. They continue to point out that an indispensable condition to European prosperity is an agreement to reduce production in all producing countries, but French operators at the latest negotiations were apparently indifferent to such a plan. The French output and export of iron and steel has increased and influenced by the declining value of the franc still further increase may reasonably be expected. As the national quotas in a general reduction of European production would necessarily be based upon production and export at the time the agreement was concluded, the French mills stand to gain a larger share of production by waiting months or possibly years.

Otto Wolff & Co., Cologne, have increased their range of products by taking over the distribution of all tin plate produced by the Huestener Gewerkschaft, a member of the Rhine-Elbe Union. This brings under control of the Wolff organization all the German tin plate production, except for a small tonnage produced by the Capito & Klein Co., controlled by Friedrich Krupp & Co. The tin plate price is determined by adding to the Welsh base price, the freight to Germany plus the import duty. German tin plate production has been registering a steady increase with an accompanying decline in imports. In 1912 German mills produced only about 72,000 tons (about 1,600,000 base boxes) and imported about 48,000 tons (about 1,000,000 base boxes). In 1925, production totaled about 91,000 tons (about 2,000,000 base boxes) and imports had declined to 15,000 tons (about 330,000 base boxes). The bounty agreement of last year, under which manufacturers of products for export receive materials at world market prices does not apply to tin plate, so that manufacturing consumers are at somewhat of a disadvantage, especially in the export of tin plate articles.

The iron and steel markets have not shown any signs of marked improvement. There are still more than 1,900,000 unemployed in Germany, the total having been reduced by only about 100,000 since the high point of unemployment in February. Foundries are only consuming small lots of pig iron, building is quiet despite a recent increase in low credits.

Semi-finished material is quiet and prices depressed as a result of keen foreign competition. The foreign prices of semi-finished steel have declined recently, so that blooms are being quoted by the European competitors of German mills at £3 19s. (\$19.20) per ton,

billets about £4 5s. (\$20.65) and slabs £4 9s. to £4 10s. (\$21.62 to \$21.87) per metric ton, f.o.b. Antwerp. The German export price is at present about 2s. per ton higher.

The Railroad Corporation's orders for permanent way material, which were expected to provide a fair tonnage of business for the rail mills, have proved to be considerably smaller than had been estimated. There has been an increase, however, in the demand for mine and street-car rails. In South Germany the demand for structural material is improved. The domestic market for bars is quiet and the world market price lately declined to £5 (\$24.30), f.o.b. Antwerp, a price that German mills may be unwilling to meet. The bar syndicate claims to be still maintaining a price of £5 2s. (\$24.78) per metric ton on bars for export. The sheet market is dull and with the franc exchange further depreciated, German sheet mills are finding it exceedingly difficult to secure profitable export prices. The wire market has recovered from its recent depression, but demand for wire rods is smaller. There is a particularly active demand from foreign markets for plain galvanized and barbed wire. Prices of most products show a decline of 0.75 to 1 per cent as a result of reduction of the sales tax.

Pig iron prices are unchanged and production is increasing, although it is still below the rate of a year ago. March output was 716,654 metric tons compared with 990,606 tons in March, 1925. Steel production in March also registered a slight increase, but with 949,797 metric tons was considerably under the 1,209,455 tons of March, 1925. The production of steel rails and other railroad permanent way material exceeds the output of a year ago. Demand for tubes from the automotive industry has shown a slight increase, but French and Belgian competition is severe.

The German automotive industry shows a marked revival and the German trade press continues an active campaign against American made cars, declaring that they prove more expensive than German cars because of the need of constant repair and the fact that the larger American cylinders are taxed more heavily than the smaller German cylinders. In 1925 automobiles to the value of 68,224,000 m. were imported, while only 37,906,000 m. worth came in in 1924.

The railroad car builders continue depressed. Of the 100,000,000 m. advanced by the State to the Railroad Corporation for purchases, only a small part went for new cars. The corporation has today 138,000 cars more than are needed under normal traffic conditions and as only about 30,000 cars are scrapped each year, there is small prospect of heavy car construction for some time. There are 48 car builders in Germany, eight of which are members of the "Eislieg," which endeavors to establish uniform prices. The other builders, however, are not governed by this organization and make liberal concessions to secure business.

Other branches of the engineering industry are somewhat improved, demand for agricultural machinery being much better. The government is arranging a credit to enable farmers to purchase tractors. The State has definitely undertaken to guarantee 60 per cent of the 300,000 m. credit which will be extended to



Russia for the purchase of factory equipment and machinery.

The Solingen manufacturers of high-grade steels report a slight improvement particularly in articles of high quality. Business has been hampered by the French increase in duties on scissors, razors, penknives and other cutlery by 30 per cent.

## Better Export Trade Expected

### British Strike May Bring Orders to United States—Japan Inquires for Rails—Large Reinforcing Bar Projects

NEW YORK, May 11.—While there has been a large number of inquiries from Japan recently for rails, many of these are regarded by exporters as largely for the purpose of testing the market. At the same time some of the business is being awarded. A tonnage for a privately operated railroad in Tokio, 6 miles of 60-lb. rails, was placed with a large Japanese export house, which awarded the tonnage to the leading export interest.

Thus far the British general strike has exercised no effect on the Japanese market, but should it be protracted there is a belief in some quarters that many orders on the books of British mills, particularly those for tin plate, would be redistributed, some of the business probably coming to American makers. Perhaps the beginning of such business lies in some small tin

plate inquiries from British possessions, which have appeared in the American market in the past week.

Although Welsh tin plate makers are temporarily eliminated from the market, which would tend to make the price of mills in the United States more attractive, the present quotation of \$82 to \$83 per ton, c.i.f. Japan, by American mills for light gage black sheets, is not developing much business. Stocks of sheets in Japan are sizable and there is apparently no urgent demand.

Importers of continental steel products for consumers in the United States have been active lately on sales of hoops and continental mills, particularly German, are evidently meeting the American domestic price on cotton ties. Several importers report the sale of moderate tonnages of ties. Merchant bars from German mills are quoted at about 1.65c. per lb., base, c.i.f., duty paid, and reinforcing bars at about 1.75c. per lb., base, for Thomas steel.

Projects under consideration involve some sizable tonnages of reinforcing bars and both foreign and American mills are evidently competing for this business. A project under consideration in Havana, Cuba, calls for several thousand tons of bars, a viaduct at Key West, Fla., is reported as having about 11,000 tons of bars in the contract and a project in Canada is said to involve an unusually large tonnage of reinforcing bars. Apparently the Raymond Concrete Pile Co., New York, with a contract for a sea wall in Maracaibo, Venezuela, will place the business shortly, the tonnage required having been reduced to about 1500 tons of bars to be shipped with the necessary cement. While it is believed that continental material will be purchased, prompt delivery is now a factor.

## AUTOMOBILE MAKING

### Census for 1925 Shows Growth of 7 Per Cent from 1923

According to data collected at the biennial census of manufactures, the establishments engaged primarily in the manufacture of motor vehicles in 1925 produced 3,655,048 passenger vehicles, valued at \$2,527,366,148; 13,627 public conveyances, valued at \$39,454,025; 1185 Government and municipal vehicles, valued at \$10,183,227; 487,970 business vehicles, valued at \$357,485,239; and 8531 trailers, valued at \$3,449,017; together with other products valued at \$433,918,149, making a total of \$3,371,855,805. The output of motor vehicles of all classes in 1925 aggregated 4,157,830 in number and \$2,934,488,639 in value. These aggregates represent increases of 6.9 per cent in number and 12.4 per cent in value as compared with 1923, the last preceding census year. The values given are wholesale factory values.

Closed passenger cars have increased from 10 per cent of the total in 1919 to 21.6 per cent in 1921, to 35.1 per cent in 1923, and to 58.3 per cent in 1925. The number of this class of motor vehicles manufactured in 1925 reached a total of 2,080,033 out of 3,655,048 passenger cars, compared with 1,201,577 out of 3,472,681 in 1923, 304,220 in 1921, and approximately 156,000 in 1919.

By unit wholesale values of passenger cars and by capacities of trucks, the 1925 output was as follows:

Passenger vehicles, number*	3,565,038	Per Cent
Value up to \$500.....	1,458,392	40.9
\$501 to \$800.....	1,163,041	32.6
\$801 to \$1,500.....	776,046	21.8
\$1,501 to \$2,500.....	136,104	3.8
\$2,501 to \$3,500.....	17,458	0.5
\$3,501 and up.....	13,997	0.4
Delivery wagons, trucks, buses, sight-seeing wagons, etc. (complete cars and chassis).....	495,019	
Up to 1 ton, inclusive.....	363,385	73.4
Over 1 to 2½ tons, inclusive.....	105,825	21.4
3 to 4½ tons, inclusive.....	14,219	2.9
5 tons.....	8,797	1.8
Over 5 tons.....	2,793	0.5

\*Not including 90,010 passenger chassis.

Wage earners in 1925 numbered 226,948, a drop of 6 per cent from the 241,356 of 1923. Wages paid showed a similar decline, from \$406,730,278 to \$379,-

284,935. Average earnings per man were \$1,671 in 1925, against \$1,685 in 1923.

### Automobiles in 1926

Figures of the National Automobile Chamber of Commerce, New York, show a total registration in the United States at the end of 1925 of 19,954,347 units, of which 17,512,638 were passenger cars and 2,441,709 were trucks, buses, etc. Five States had more than 1,000,000 cars each, New York leading with 1,625,583, followed by California, Ohio, Pennsylvania and Illinois. Michigan and Texas both had more than 975,000.

Annual replacement requirements for this year are given at 1,503,127 cars. In connection with this an estimate has been made that the average life is about 8 years, compared with 6½ years five years ago and with 5 years twelve years ago.

April production is estimated by the chamber at 449,173 cars and trucks, against 449,677 in March and 359,976 in April, 1925. During the first four months the total was 1,590,074, an increase over the first four months of 1925 of 245,422 vehicles, or 18 per cent.

### Italian Iron and Steel Production of 1925 Largely from Ilva

WASHINGTON, May 10.—The Ilva plants at Piombino, Portoferraio, and Bagnoli produced 368,000 metric tons of the 475,000 tons of pig iron manufactured in Italy during 1925, according to the annual report of the company, says a statement to the Department of Commerce from Commercial Attaché H. C. MacLean, Rome. Improvements to the furnaces of the company are credited with having notably increased production during the second half of last year, 212,000 tons being the output of five furnaces. This is a quantity that had never been reached during any previous similar period, even with eight furnaces operating. The lease covering the iron mines on the Island of Elba limits the amount of ore produced by these mines, which previously have been the only sources of supply for the furnaces.

Efforts are being made to increase production of other Italian mines which, it is hoped, will furnish about 200,000 tons in 1926. Also, the use of pyrite ash in blast furnaces has grown rapidly. Of the 1,500,000 tons of steel produced in Italy last year, more than 600,000 tons were from the Ilva plants.

# New Pig Iron Duty May Be Delayed

British Strike and Countervailing Duty on Indian Iron  
Introduce Complications Under Flexible Provision  
—Domestic Costs Discussed

BY L. W. MOFFETT\*

WASHINGTON, May 11.—With the nation-wide strike arising in England and a countervailing duty declared against imports of pig iron from the Tata Iron & Steel Co., India, it is possible that action by the United States Tariff Commission may be delayed with regard to the application, under the flexible provision of the tariff act, for an increase of 50 per cent in the duty on pig iron. Because of these developments it is conceivable that a supplemental report may be required in connection with an investigation, recently completed, which was followed by hearings at which merchant pig iron interests representing the American Pig Iron Association and the applicants for the increase, the Eastern Pig Iron Manufacturers, appeared. They filed briefs with the commission on Wednesday of last week and strongly approved of the report of investigators from the Metals Section of the commission, which inferentially suggested that an increase of 50 per cent be made in the duty on pig iron. The actual recommendation, however, would have to be made by the commission itself in its report to the President.

## Which Country Will Be Principal Competitor?

It was previously considered probable that the report of the commission might be made soon, perhaps before the adjournment of Congress, which seems near at hand, but the strike situation along with the declaration of a countervailing duty against pig iron from the Tata works changed the situation. This was due to the fact that differences in costs under the tariff act are to be based upon those of the principal competing country. India was the chief competing country in the pig iron trade. But the countervailing duty, the specific amount of which has not been determined, has developed the possibility of changing the situation and it was considered likely that England might prove to be the principal competing country. In view of the strike, however, it remains to be seen now whether India will continue to be the chief competing country or whether it will prove to be Germany or some other Continental country. In the event another report were made, it would likely be of a supplemental character, inasmuch as the one recently completed carries costs for numerous pig iron producing countries other than India, although the more detailed report and costs relate to India. The supplemental work, however, would again call for another hearing, so that final action on the pig iron situation would be postponed indefinitely.

## Will Ask for Higher Regular Duty Later

But even if the commission recommends the 50 per cent increase in duty and it is granted by the President, it seems increasingly evident that the domestic merchant pig iron interests will later on seek a higher regular duty on pig iron. The 50 per cent increase would mean 37.5c., which, added to the prevailing duty of 75c., would make a total of \$1.125 a ton.

"While time alone can show the extent to which the increased duty may prove effective in equalizing conditions at home and abroad, and while the allowable increase in the amount of duty may not appear in itself to be sufficient to effect such equalization, yet it should not be thought that it is a negligible or unimportant

figure," says the brief of the merchant interests. "It represents a substantial proportion of a normal reasonable profit upon a ton of pig iron. Thus a furnace of 500 tons daily capacity, requiring an investment, including working capital, of approximately \$2,500,000, and producing, with allowances for mishaps and time for relining, say 150,000 tons of iron per annum, would need to make \$1.33 per ton of iron to yield an 8 per cent return upon its investment. Thirty-seven and one-half cents is 28 per cent of this figure, and hence an addition to profits or, as at the present juncture of affairs, as a deduction from losses, it is by no means an unimportant figure."

The brief was filed for the American Pig Iron Association through Col. F. B. Richards, chairman of the association committee; John W. Logan, William S. Rogers, C. E. Bertie, Ralph H. Sweetser and Robert C. Lea. The committee filing for the Eastern Pig Iron Manufacturers included Mr. Logan, chairman, and Mr. Lea.

## Distinguish Between Iron in Pigs and Hot Metal

The brief follows closely the line of argument made at the hearing, as reported in THE IRON AGE, and among other things emphasizes the difference between iron in pigs, made dutiable, and pig iron, the former being merchant iron which is susceptible of becoming an article of commerce, and the latter being hot metal made and used directly by steel works interests. It is pointed out that the hot metal should be excluded from consideration and that the inquiry should be confined to merchant iron which has to meet competition, it being contended that the steel works iron is protected through the duty on the steel produced from the blast furnace product.

While the brief strongly commends the commission's report, it declares its domestic cost figures err on the side of being too low rather than too high. The report was based on costs for 1924, which, the brief says, was a year of slackened demand for pig iron as compared with 1923.

## Brief Discusses Delivered Costs of Domestic Iron

At the suggestion of the commission, the brief includes a table giving costs of transportation to market which are regarded generally as a factor affecting the delivered costs of domestic iron. It is stated, however, that since freight on "iron in pigs" is almost invariably paid by the parties to whom it is consigned, the producers do not have accounting records available showing the amount of freight which their products bear. The absence of such figures, it is declared, makes it impossible within the short time at disposal of the pig iron makers to obtain a weighted average figure representing the cost of carrying "iron in pigs" to consumers. The brief carries figures giving freight rates from Buffalo, eastern Pennsylvania and Virginia to New York harbor, northern New Jersey, Philadelphia and Boston. It is stated that it should be noted that although the eastern Pennsylvania furnaces enjoy relatively low rates to Philadelphia, "yet it is at Philadelphia that the largest amount of foreign iron has come in, thus showing that, even at the point where domestic iron bears the least burden of freight, the foreign irons, particularly from India, the principal

\*Washington representative, THE IRON AGE.



competing country, can and do undersell the domestic material.

#### Approve Use of Consular Reports to Determine Foreign Costs

The brief approves the use of consular invoice prices as a means of determining foreign costs in the absence of actual cost figures.

"Unless the exporters of foreign iron have been guilty of perjury and unless their iron is being 'dumped' into this country, it necessarily follows that

the invoice prices which do, or should, include handling charges, exporters' profits and normal profits of manufacturers, are higher and not lower than bare costs of production," says the brief.

Production of pig iron by steel works and merchant furnaces in the Atlantic district and amounts of incoming imports of pig iron over a period of years, submitted at the hearing by Mr. Lea, are reproduced in the brief. The purpose of the table is to show the adverse effect on markets in the Atlantic district for domestic merchant iron due to incoming shipments from abroad.

## Simplifying to Save Metal Wastes

Committees Working on 27 Projects; 60 More to Be Prosecuted Later

WASHINGTON, May 10.—Plans for organization of the National Committee on Metals Utilization have been almost completed. A committee with Secretary Hoover as chairman has been named and actual organization will take place at a meeting at the Department of Commerce on Thursday. The committee will base its plans on experiences it has had in working with the iron and steel and related industries. Among other things, it will carry out a more general attack on the wastes due to lack of simplification of commodities and specifications in the metal-using industries. Taking up simplification of specifications marks a new approach to the problem of waste and promises to be far-reaching in effect.

"The movement is to conserve not so much raw materials as the processed article," said Chatten Wetherill, director of the committee. "To produce unnecessary varieties means great waste of labor and equipment. To reduce unnecessary variety means to save. Simplification is thus the key to better utilization in the metals group. To encourage the application of simplified practice, to extend the adherence of simplified practice throughout the metals industry and to establish a national directory of simplified commodities which will be of aid to purchasing agents, engineers

and designers, as it will enable them to confine their requirements to those sizes and varieties carried in stock, and to eliminate the non-essential differences in existing specifications for raw material, all will lead to the elimination of waste."

According to Mr. Wetherill, there is room for unified specifications in many branches of the metals industries. He said that a preliminary survey revealed that 80 per cent of the business in metals is done in 20 per cent of the varieties.

The committee selected includes the following:

American Iron and Steel Institute, James B. Bonner; National Machine Tool Builders' Association, E. F. DuBrul and H. W. Lucas; National Founders' Association, William Barr; American Foundrymen's Association, S. Wells Utley, Detroit Steel Castings Co.; National Metal Trades Association, Harold G. Smith, president Illinois Tool Works; National Automobile Chamber of Commerce, J. E. Linabury and H. R. Cobleigh, General Motors Corporation; American Society of Mechanical Engineers, Stanley Flagg, Jr., and Charles F. Manly; American Institute of Electrical Engineers, F. B. Crosby, Morgan Construction Co.; National Association of Farm Equipment Manufacturers, B. J. Kough, John Deere Plow Works; National Association of Purchasing Agents; A. P.

### Projects Under Way and Contemplated for Simplification in Metals Industries

Committees are now actively at work on the following projects:

Ball bearings	Grinding Wheels
Bolt, Nut and Rivet Containers	Iron and Steel Scrap
Carbon Brushes	Lock Nuts and Lock Nut Washers
Carriage Bolts and Nuts	Malleable Iron Fittings
Cold-Water Tanks	New Billet Steel Reinforcing Bars
Dental Grinding Wheels	Pneumatic Tanks
Die Heads	Steel Spirals
Drills and Reamers	Stoves (Gas, Oil and Coal)
Dry Cells and Batteries (Electric)	Taps and Dies
Elevated Steel Tanks on Towers	Valves
Fire-Hose Couplings	Warm Air Furnaces
Foundry Practice	Wrought Iron and Steel Pipes and Fittings
Furniture, Metal	Manhole Frames and Covers.
Gasoline and Fuel Oil Tanks	

The following projects are ready to be started as soon as sub-committees can be formed:

1. Air Receivers	7. Carbon Brush Holders
2. Automatic Sprinkler Systems	8. Castings
3. Boat Engines and Appliances	9. Cast Iron Soil Pipe
4. Brass and Bronze Name Plates	10. Closed Tanks
5. Brass, Copper and Zinc for Bearings	11. Combination Lockers
6. Brass Seated Unions	12. Concrete Mixers
	13. Copper and Brass Pipe and Tubing
	14. Cotter Pins

15. Crossarms, Pins and Insulators	36. Pipe for Stoves, Furnaces, Heaters, Elbows, etc.
16. Drill Chucks and Arbors	37. Pneumatic Tools and Equipment
17. Electric Field (Miscellaneous)	38. Pressure Regulating Valves
18. Electric Refrigerators	39. Punches and Dies
19. Elevators	40. Radio Equipment and Parts
20. Engines, Pumps and Machine Tools	41. Railroad Tools and Equipment
21. Farm Implements	42. Reels and Spools
22. Fire Apparatus	43. Roller Chains
23. Gas Water Heaters	44. Sewing Machines
24. Gasoline and Fuel Oil Tanks, Large Capacities	45. Steam Boiler
25. Hot and Cold-Water Valves	46. Steam Packing (boxes and rods)
26. Hot Rolled Steel in Coils	47. Steel Flats
27. Hollow Metal Doors and Trim	48. Steel Partitions
28. Lathe Chucks	49. Steel Sash
29. Line Hardware	50. Steel Shelving
30. Material Handling Equipment	51. Steel Stairways
31. Machine Bolts and Nuts	52. Stove Bolts
32. Metal Ceilings	53. Tie Plates
33. Mill Supplies: Elevator Buckets, Journals of Mill Rolls, Pulleys, Trucks	54. Tool Steel
34. Oil Burners	55. Trap Screw Ferrules
35. Oil-Well Equipment	56. Trench Excavating Machinery
	57. Warm Air Registers
	58. Washboards
	59. Wire and Rod Gages
	60. Wire Mesh Covers



Hickcox, Scovill Mfg. Co.; American Federation of Labor, A. J. Berries, secretary Metal Trades Department; National Association of Manufacturers, representative not yet named; Chamber of Commerce of the United States, P. T. Norton, Case Crane Engineering Co.; American Electric Railway Association, R. H. Dalgleish, Capital Traction Co.; National Retail Hardware Association, Thomas B. Howell; American Railway Association, F. M. Waring, engineer of tests Pennsylvania Railroad; American Engineering Council, Dean Dexter S. Kimball, College of Engineering, Cornell University; American Engineering Standards Committee, C. E. Skinner.

The plans of the committee are comprehensive. It will act as a directing group to the office of Metals

Utilization. There will be established sub-committees of trade associations which will deal with problems in their particular lines. These committees from the trade associations, known as project committees, will handle one or more simplification projects, conduct surveys of existing varieties of products and prepare preliminary recommendations for action by a general conference. In the case of previous surveys of this sort it has been found desirable to have various producing groups, distributors and consumers represented. Director Wetherill has in his office 87 products in simplification in the metals industries, on which requests for assistance have been received. On some, nothing has yet been done. On 27 sub-committees are at work.

## More Protests Against Mileage Scale

### Cincinnati and Massillon Companies Join Those Opposed to Jones & Laughlin Scale of Rates

WASHINGTON, May 11.—Protests against the Jones & Laughlin scale of rates on iron and steel products are coming to the Interstate Commerce Commission in increasing number with the approach of May 29, the effective date of the commission's order in that case. As pointed out in THE IRON AGE of May 6, 1926, page 1312, the Chamber of Commerce of Cleveland has asked for suspension of the rates set up by this scale and previously carriers serving the Pittsburgh district, as well as steel makers in that district, protested against application of the scale.

Among protests received asking suspension of the rates are those of the Pollak Steel Co., Cincinnati, and the Central Steel Co., Massillon, Ohio. It is understood that the Chamber of Commerce of Youngstown is about to file a protest. For the most part the burden of the complaints being made is that the particular producing districts making protests will be placed at a disadvantage under the new scale as compared with competing points.

The Pollak company protests that under the Jones & Laughlin scale the Cincinnati-St. Louis rate on new iron and steel car wheels will be increased to 26c. per 100 lb., while the rate on new paper car wheels will remain at 19c. The carriers have replied that the proposed change in iron and steel car wheels, together with the leaving of the rate on new paper wheels unchanged, is in compliance with the order of the commission in the Jones & Laughlin case. The commission has advised the Pollak company to file a formal petition.

The Central Steel Co. contends that the Jones & Laughlin scale will establish rates from Massillon which will be prejudicial to Massillon and in violation of the long-and-short haul section of the Act to Regulate Commerce. It is pointed out that the tariff carries the same rates from Massillon as from Youngstown. To South Bend, Ind., for example, one of the company's principal markets, it is said, the fifth class rates from Youngstown are 30c. per 100 lb., from Pittsburgh, 32c., and from Massillon, 27.5c. Thus the spread now enjoyed by Massillon is 4.5c. under Pittsburgh and 2.5c. under Youngstown.

### To Hold Hearing on Rates from Virginia Blast Furnaces

WASHINGTON, May 11.—A hearing on a complaint of the Virginia Pig Iron Association against rates from Virginia furnaces to eastern Pennsylvania, New England, and other points on the Atlantic seaboard, has been set by the Interstate Commerce Commission for May 20, at Roanoke, Va., and will be conducted by Examiner Setterfield. The association also has pending before the commission a complaint against rates from its constituent furnaces to points in Ohio, Indiana, Illinois, southern Wisconsin, and Michigan.

In the former complaint the Virginia association

charges that the rates are preferential to producers in Alabama and eastern Pennsylvania. In the complaint against rates to Western points it is charged that rates from furnaces in southern Ohio, other Ohio points, Alabama and Tennessee, are unduly discriminatory against Virginia furnaces.

### Recommends Lower Pig Iron Rate from Birmingham to Nashville

WASHINGTON, May 11.—The rate of \$2.37 per gross ton on pig iron in carloads from the Birmingham district to Nashville, Tenn., should be reduced to \$1.69, according to a report made to the Interstate Commerce Commission by Examiner W. R. Brennen. Complaint against the rate of \$2.37 was made by the Allen Mfg. Co. and others engaged in the manufacture of stoves and ranges, with principal offices at Nashville.

### Schedules for Higher Cast Pipe Rate from Chattanooga Withdrawn

WASHINGTON, May 11.—Railroads have withdrawn and canceled schedules which proposed to increase the rate on cast iron pipe from Chattanooga, Tenn., to Plainfield and Somerville, N. J., from \$8.89 to \$9.25 per net ton. By reason of this action by the railroads, the Interstate Commerce Commission has vacated a recent order which suspended the tariffs to July 3.

### Commission Suspends Proposed Advances in Pig Iron Rates in C. F. A. Territory

WASHINGTON, May 11.—The Interstate Commerce Commission has suspended from May 1 until Aug. 29, tariffs of the New York Central and other carriers in Central Freight Association territory proposing increased rates on pig iron in carloads from Toledo, Cleveland and other producing points in Central Freight Association territory to destinations in that territory.

Typical of the increases proposed is the rate from Toledo to South Bend, Ind., which is now \$2.65 per gross ton. The tariffs propose to increase this rate to \$2.90. They also propose to increase from \$3.15 to \$3.53 the rate from Cleveland to Indianapolis. These proposed increases actually represent an attempt by the railroads to restore rates prevailing prior to Jan. 6, and nearby dates of the current year.

It will be recalled that at that time the New York Central and the Wheeling & Lake Erie railroads, acting independently of other carriers in Central Freight Association territory, filed tariffs reducing rates on pig iron from various Ohio producing points to destinations in Ohio, Indiana, and Michigan. At the time the other Central Freight Association territory carriers plainly resented the action of the New York Central and the Wheeling & Lake Erie, but the reduced rates received the approval of both the Interstate Commerce Commission and the Public Utilities Commission of Ohio, and became effective. Subsequently the New York Central

and Wheeling & Lake Erie canceled the reduced rates and filed new tariffs which attempted to restore the old and higher rates. The old and new rates to many points were published in considerable detail in *THE IRON AGE*, Jan. 14, 1926, page 162.

### No Agreement on New England Rates from Troy Furnace

WASHINGTON, May 11.—Attempts to reach an agreement between the Troy, N. Y., blast furnace interests and the New Haven Railroad as to rates on pig iron from Troy to New England points were unsuccessful at the second informal hearing held yesterday before Assistant Traffic Director W. N. Brown of the Interstate Commerce Commission. It was indicated that as a result a formal complaint will be filed with the commission. The New Haven through Attorney George H. Woods made an alternative proposal which was unacceptable to Attorney Burchmore, who represents the Troy furnace. The New Haven proposed either to blanket the rate from Troy to points on the New Haven or to apply the carrier's pig iron scale from Troy plus 20c. a ton for multiple line hauls applying by way of the Boston & Albany Railroad junctions or by way of Beacon, N. Y., and to calculate the rates by the shortest workable mileage.

### Plan Merger of Swedish Iron and Steel Plants

WASHINGTON, May 11.—Improvement in the Swedish iron industry through the closing down of certain plants and the concentration of operations in others, is the end in view through negotiations calling for a new plan of reorganization, according to a statement issued by the European Division, Department of Commerce. The proposal originated about a year ago, and in January a committee suggested the fusion of the Fagersta, Forsbacka, Horndal, Kloster, Schebo and Smedjebacken works by means of an exchange of shares, with the approval of the interested banks. Certain difficulties prevented the adoption of those plans and the new proposal was presented, which, in addition to the six companies named, includes the Kilsva works.

According to the new plan the Swedish government is to advance a loan of 15,000,000 crowns at a low interest rate, with which the bank debts of the iron and steel companies can be settled. The fusion, it is stated, would make possible plant specialization and lower sales and administration costs.

### Heavy Freight Movement

During the first 17 weeks of 1926 the number of cars of revenue freight loaded by the railroads has been greater than during the corresponding period of any previous year. The total is 15,781,435 cars, compared with the previous high record of 15,509,239 cars last year and with 15,086,241 cars in 1924 and 15,081,006 cars in 1923. With one exception, every week since Feb. 20 has shown a higher movement in 1926 than in the corresponding week of any preceding year.

### Pennsylvania Safety Conference

A state-wide conference under the auspices of the Pennsylvania Department of Labor and Industry will be held in the Capitol at Harrisburg, May 28, to discuss matters concerned with industrial safety. The Pennsylvania Society of Safety Engineers is cooperating. John A. Oartel, president of that society, will preside at the morning session, while Cyril Ainsworth, director Bureau of Inspection, Department of Labor and Industry, will preside in the afternoon. Papers on specific questions relating to safety are scheduled for both sessions. All papers will be developed with the idea of stimulating discussion from the floor.

## IMMIGRANTS IN MARCH

### Net Gain of 26,047—More Than One-Sixth Were Skilled Workers; 147 Iron and Steel Workers

WASHINGTON, May 10.—A total of 44,686 aliens entered the United States in March, 29,504 being classed as immigrants and 15,182 as non-immigrants, according to the Bureau of Immigration. Aliens departed during March numbered 12,439, the emigrant class comprising 3457 and the non-emigrant, 8982. The Mexican, German, Irish, English, Scandinavian, Scotch, French and Hebrew, in the order named, were the principal races contributing immigrant aliens in March, 90 per cent of the total for the month being of these eight races.

Of the immigrants in March, 4582 came from Germany, which led all other countries. Germany also led for the period from July 1, 1925, through March, 1926, with 35,387. The total skilled immigrants entered in March was 5371, and for the July-March period it was 39,530. Of the March immigrants 147 were classed as iron and steel workers and for the July-March period the number of iron and steel workers entering the country was 996. Machinists entered in March numbered 194 and for the July-March period the number was 1460.

### French Iron and Steel Output Establishes New Record

France produced 772,000 metric tons of pig iron and 726,000 tons of steel ingots and castings in March, both of which figures establish new records for monthly output, according to a cable to the Department of Commerce from Assistant Commercial Attaché R. C. Miller, Paris. The February production was 707,000 tons of pig iron and 630,000 tons of steel ingots and castings. On April 1 there were 147 blast furnaces in operation, 29 furnaces ready to operate and 44 furnaces under construction or repair.

### Break Ground for New Strip Mill at Weirton

The Weirton Steel Co., Weirton, W. Va., has broken ground for a new wide strip mill, which is expected to be completed and in operation early in 1927. Work is going along rapidly on a new blast furnace and an extension to the open-hearth department. Present indications are that one of three new open-hearth furnaces will be in production by August and the blast furnace by the middle of October. The contract for all piping in connection with the company's expansion program has been placed with B. Floersheim & Co., piping engineers and contractors, Farmers Bank Building, Pittsburgh.

### April Building Construction Less Than March

Construction contracts in April are reported by F. W. Dodge Corporation at \$570,614,000 in the 37 States east of the Rocky Mountains. This shows a decrease of almost 5 per cent from March and an increase over April, 1925, of less than 1 per cent. Residential construction, at \$265,331,000, represents 46 per cent of all. Industrial buildings were only 8 per cent, at \$45,653,000.

Total building and engineering contracts in the first four months have amounted to \$2,015,551,000, which is the largest amount yet recorded for the first four months of any year. The increase over 1925 was 20 per cent.

The University of Michigan has issued a bulletin which outlines its program in chemical engineering and graduate courses in general chemical engineering, metallurgical engineering, gas engineering and organic chemical industries.



## Too Many Used Tools Bought

Says Present Policy if Continued for Another 10 Years Will Cripple New England's Prestige

**F**AILURE to balance the loss of skilled mechanics and patents by introducing the most up-to-date machinery was declared by E. C. Mayo, president and general manager of the Gorham Mfg. Co., in a paper presented at the regional meeting of the American Society of Mechanical Engineers, held in Providence, May 3-6, to be one of the controlling factors in the present situation in New England.

Mr. Mayo's paper was on the subject of "New England Conditions Affecting the Machine Tool Industries."

"New England," he said, "has continued to hold her own until the present generation. The position of industrial manufacturing supremacy was maintained by a monopoly of skilled mechanics. The natural product of the skilled mechanic is invention. Invention is covered by patents. Hence, New England attained the heights of success by a monopoly of skilled mechanics and entrenched herself with patents."

"The New England mechanic has migrated to other parts of the country. When these men located in other sections they sent back home for help. New England's stock in trade, her skilled mechanics, was gradually diffused over other sections of the country."

"This resulted in the establishment of manufacturing plants that immediately went into keen competition with those of the mother section and as a result New England products could be obtained elsewhere than in New England, sometimes at a lower price and sometimes under more favorable conditions."

"As New England shared her skilled mechanics with other sections of the country, she lost her patent supremacy. The two went hand in hand."

The failure to recognize that the loss of skilled mechanics and patents should be balanced by the introduction of highly productive machinery has not been due to a lack of keenness on the part of the New Englander, it was said, but "is the result of an inherent fear of invested capital and a state of complacency or self-satisfaction which is the natural outgrowth of the monopolies in skilled labor and patents which they have enjoyed for generations."

"It has been my privilege to know, personally, some of the outstanding business men and manufacturers in this section," said Mr. Mayo. "Here is the philosophy of one of them. He would rather operate a machine that has been written down to \$2 on his books than to purchase the most up-to-date unit at any price. The theory being that the \$2 machine, because of the low interest and depreciation charges, can in good times (prices being reasonably high) compete with the more expensive machine and in hard times both will be idle and the high priced machine will eat itself up."

"Buying machine tools because they are cheap to purchase, not cheap to operate, is a dangerous philosophy. This is an example of the fear of invested capital and that it is not an isolated philosophy is borne out by the following:

### New England Purchasing Used Machinery

"New England is the greatest dumping ground for second-hand machinery in the country. I am told 90 per cent of the machine tool business done in the past five years by three of the leading machinery houses in New England was in second-hand machine tools. If this is true, and my authority is in a position to know, it is a startling situation and goes a long way toward explaining some of the present conditions."

"This to my mind is also an example of where the factor of self-satisfaction plays its part. Why should we feel we can take the discarded machine tools of our neighbors and compete against them in the open market? These tools they could not afford to operate, but we chuckle at the low prices we pay for them and manfully try to operate our establishments at a profit."

"Some of our neighbors in the Middle West will throw out a machine tool that is six months old if a new one is designed that makes its operation a liability."

If we are to maintain our present position, we must follow a similar policy; certainly to a modified extent. The day of pointing with pride to operating heirlooms in a manufacturing plant has gone forever."

"With modern machine tools and its inherent mechanical ability, in spite of its geographical location, New England can compete with the world. The present policy, pursued for a period of another ten years, will certainly cripple New England's prestige beyond a point at which it can be regained without vast expenditure of money, if at all."

"Every executive should make a careful analysis of his machine tool equipment and have the vision and courage to scrap the machinery that cannot be profitably operated in competition."

## To Address Pittsburgh Foundrymen

Enrique Touceda, consulting engineer American Malleable Castings Association, and professor of metallurgy, Rensselaer Polytechnic Institute, Troy, N. Y., will be the speaker at the regular monthly dinner and meeting of the Pittsburgh Foundrymen's Association, in the Assembly Room, Fort Pitt Hotel, Pittsburgh, Monday evening, May 17. His subject is "Malleable Iron Foundry Practice," but he will also touch on steel, gray iron and brass foundries.

The election of officers for the coming year also will be held at this meeting and the nominating committee has made the following recommendations: Lawrence V. Stevens, Locomotive Stoker Co., Pittsburgh, president; C. D. Carey, Verona Steel Castings Co., Verona, Pa., vice-president; William J. Brant, secretary-treasurer; William K. Frank, Damascus Bronze Co., E. D. Frohman, S. Obermayer Co., James Jones, Pittsburgh Valve Foundry & Construction Co., W. E. Trautman, Duquesne Steel Foundry Co., and W. H. Holt, Pressed Steel Car Co., executive committee. The annual outing of the association will be held Saturday afternoon, July 24, at Turner Park, Perrysville.

## New York Steel Treathers to Discuss Automobile Steels

The last monthly meeting of the New York chapter of the American Society for Steel Treating before the summer vacations will be held Wednesday evening, May 19, in the assembly room of the Merchants' Association in the Woolworth Building, New York. J. L. McCloud, of the River Rouge plant of the Ford Motor Co., Dearborn, Mich., will discuss "Steel Selection for Automotive Work." He will talk about the special steels used by his company, many of which do not conform to S. A. E. specifications, yet are understood to be admirably suited for the purpose to which they are put.

## Locomotive Shipments Decline

Shipments of railroad locomotives in April are reported by the Department of Commerce at 151, compared with 162 in March and 163 in February. The April figure, however, is considerably above the 101 for April last year. The first four months of 1926 show a higher total, month by month, than was recorded in any month of 1925. For the four months there were 597 locomotives shipped this year, compared with 404 last year. Domestic shipments in the four months have included 465 steam locomotives and 56 driven by electricity. Export shipments include 57 steam and 19 electric units.

Unfilled orders at the end of the month numbered 713, of which 89 were on export orders. Electric locomotives in the unfilled list numbered 44 for domestic use and 29 for export.

The new "hypoid" gear and pinion for rear axle work is to be described at the summer meeting of the Society of Automotive Engineers at French Lick Springs, Ind., June 1 to 4, by A. L. Stewart and Ernest Wildhaber of the Gleason Works, Rochester, N. Y.

# Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

## Statistical Data Concerning the Chief Consuming Industries Indicate That:

Activity in chief consuming industries is moderately reassuring.

Car surplus makes large equipment sales unlikely.

Building volume may possibly decline; industrial building is small; structural sales only fairly satisfactory.

Automobile production is being curtailed; machine tool sales off.

Outlook for pipe in petroleum States much better.

Agricultural situation below a year ago; outlook not encouraging.

Iron and steel exports increase; imports less heavy.

OUR "composite demand line," illustrated in Fig. 1, is the most important barometer bearing on the demand for steel. The demand curve is a weighted index of the volume of business in each of the chief steel-consuming industries. In March this curve made a considerable rise, though it remained appreciably lower than in December.

In the same month, steel ingot production also increased, but it continued considerably below the level of the potential demand. April shows a small decline. It seems fair to say that steel production has been held in good adjustment to the potential demand. This is a significant fact, inasmuch as the current rate of ingot production is above the long-time trend of the normal requirements of the country. As long as this situation exists, no general decline in steel prices is probable. What is the outlook?

Considering the chief elements of composite demand separately, we find that railroad traffic showed a good increase in March and was considerably higher than in March, 1925. April figures, however, indicate a decline and, in view of the general recession in business which has now set in, it is not likely to make a good showing during the next few months.

Building activity declined both in March and April, though it is above a year ago. The trend in general is now downward and, while we see no reason to expect any sharp contraction, it seems likely to fall below the usual seasonal levels during the next few months.

Automobile production failed to make the normal seasonal gain both in March and in April. After adjustment for seasonal variation, our index shows a marked decline, though it is still above a year ago. The industry is "spotty," some companies doing well and others not. There is danger of over-production.

That curtailment has been required is reflected in the demand for sheets and strip steel.

The oil and mining industries make a fairly strong showing. The March index showed a good rise and was considerably higher than in the preceding year. In part this was due to the resumption of anthracite coal mining and in part to a large gain in drilling activity in the oil fields, which has resulted in an excellent demand for casing, line pipe, etc. Business in this quarter will probably be well sustained for some months.

The farm outlook is not encouraging. Our index has shown little change of late and is appreciably below its level of a year ago. The business in wire goods has been disappointing, according to most reports. The lateness of the season has become serious, resulting in much damage to the fruit crop and delaying planting sufficiently to threaten not only the staple crops, such as cotton, but also vegetables. The carry-over of canned goods appears to be large; the can manufacturers are reported to be overstocked; in general the outlook for tin plate is barely fair.

Exports of iron and steel increased a little in March and were considerably greater than in the same month of 1925. Probably the strike in England will help a good many manufacturers of steel temporarily. In the long run, however, the strike must be considered as an unfavorable factor, since it will injure seriously one of the country's best customers. The long-time outlook for exports is certainly not encouraging.

The net conclusion is that there was a real upturn in the potential demand for steel in March and that it was sufficient to justify both an increase in production of steel and an output considerably greater than that of a year ago. On the other hand, a gradual decline in the potential demand is probable during the next

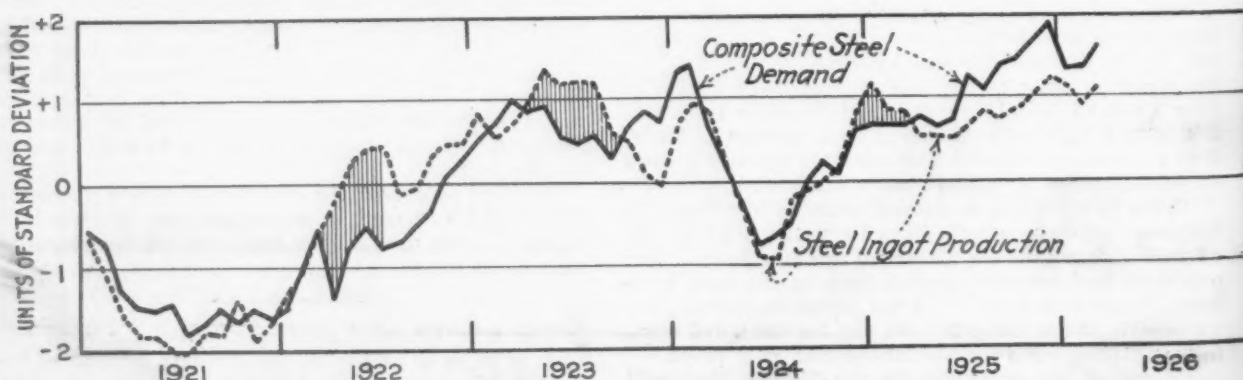


Fig. 1—The Composite Curve of Steel Demand Is Still Well Above the Curve of Steel Ingot Production But There Are Some Indications That Demand Will Shortly Begin to Decline



# In This Issue

*Pig iron production generally suspended in England because of strike.*—Tin plate makers also idle and American mills may benefit by reason of inability of British mills to deliver on export orders.—Pages 1352, 1354.

*Real root of British tie-up lies in overmanned coal industry, much as in United States.*—Problem is to get about 200,000 miners in each country into some other line of work; overdeveloped and unprofitable industry cannot permanently be subsidized by State without causing serious disturbance.—Page 1366.

*Europe gains little from great strike; Continental markets virtually disorganized.*—German mills expect France and Belgium to profit by franc depreciation; wide difference in day-to-day quotations on iron and steel products.—Page 1352.

*Outlook for iron and steel consumption reassuring.*—Composite demand curve showed gain in March; building activity and automobile production both above last year at this time; outlook for pipe in petroleum States much better; exports increase, imports decline.—Page 1360.

*Says manufacturing company ought to earn 100 per cent on its conversion cost.*—W. L. Churchill defines conversion cost as total manufacturing cost less materials cost; claims salesmen or sales managers should not have any right to set prices.—Page 1334.

*Production problem starts back on the drawing board, says Prof. Earle Buckingham.*—Design should be considered from many angles; cost of production, simplicity of operations, permissible tolerances, limitation of number of accurate surfaces required are all important.—Page 1344.

*Great hydroelectric developments on Tennessee River and tributaries stimulate manufacturing in South.*—Cheap power draws textile industry; Chattanooga center of manufacturing territory with great potentialities; 45 per cent of local hydroelectric power goes to metal-working plants.—Page 1329.

*Plans for organization of National Committee on Metals Utilization almost completed.*—Members of committee selected to study possibilities of saving in metal working processes through elimination of needless varieties in 27 lines of manufacture.—Page 1356.

*Effect of titanium on cast iron similar to silicon but more active.*—Addition of 1 per cent or more of titanium to high-silicon iron and of 0.3 per cent or more to low silicon iron greatly improves mechanical properties, according to researches in Germany.—Page 1340.

*Arranges cast house for more economical handling of hot metal and cinder.*—Spur from hot metal track extends under cast house roof; crane mounted on runway spanning hot metal track; cinder may be run directly to pots on track or to granulating pit at new Youngstown Sheet & Tube Co. furnace, Indiana Harbor, Ind.—Page 1338.

*Says loss of skilled mechanics and passing of patent protection from New England industries could be balanced by introduction of more efficient machines.*—E. C. Mayo, president Gorham Mfg. Co., Providence, says New England suffers from too much obsolete equipment; mentions report that 90 per cent of machine tool business done in last five years by three leading dealers was in second-hand tools.—Page 1359.

*National Automobile Chamber of Commerce figures present average life of car is about 8 years.*—As compared with 6½ years in 1921 and 5 years in 1914; nearly 20,000,000 cars and trucks registered on Jan. 1, 1926.—Page 1354.

*Develops practical tap drill chart for production purposes.*—A. C. Danekind, General Electric Co., describes charts and graphs showing proper drill sizes; reduction of tap breakage should result from investigation.—Page 1345.

*Southern Metal Trades Association objects to Sherman and Clayton anti-trust acts in present form.*—Advocates amendment permitting closer cooperation among business men without agreements; states that present laws have caused vast industrial waste and commercial damage.—Page 1347.

*United States exported nearly \$150,000,000 worth of industrial machinery last year.*—Latin America took more than one-third; England and Germany together about one-sixth; shipments to Asia four times pre-war figures.—Page 1342.

*Machine tool company finds selling on deferred payment basis profitable.*—Has suffered no losses in 18 years of this type of sales and considers the handling of this business better from collection standpoint than regular open account sales.—Page 1335.

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## A Help in a National Need

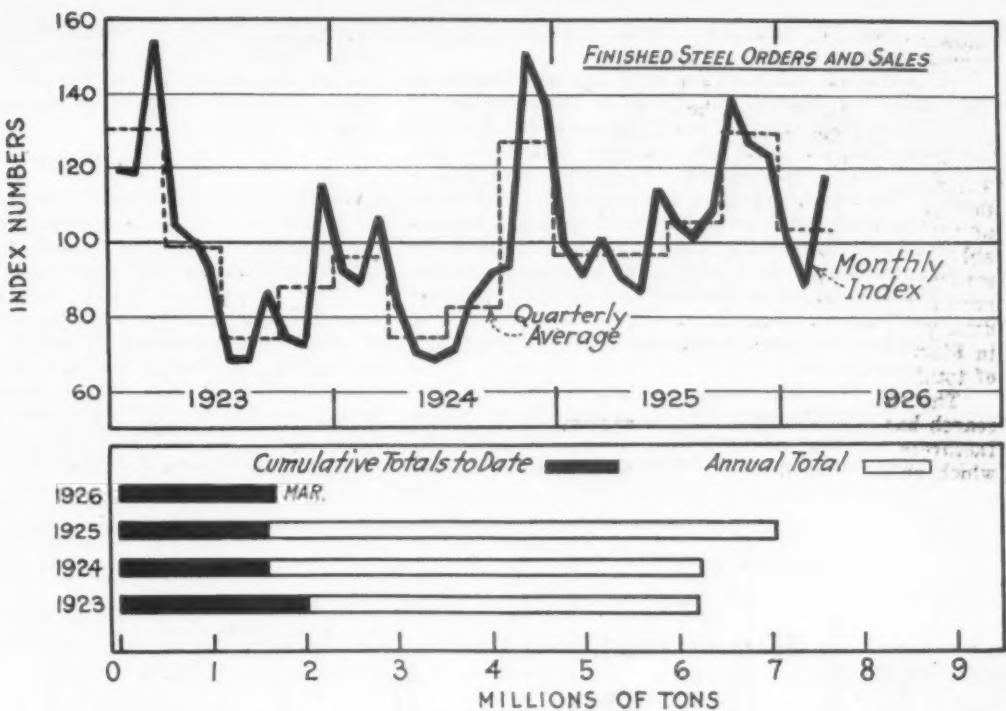
**T**HROWN in relief by the industrial troubles in Great Britain, the progress made in this country since the war seems marked. It needs only the mention to remind us of the concern over unemployment, the calls for Federal, State and municipal enterprises as a solution, a proneness to accept some paternalism in government with its submergence of individual initiative.

It remains to recall how by using every means possible, aided in particular by the Department of Commerce, industry sought the cure within itself. Cooperation has become a watchword, and in bringing about to-day's position no small credit is given outside its ranks to the business press of the country. It has been a truly useful instrument in carrying the message.

*For News Summary See Reverse Side*



Fig. 2—The Adjusted Monthly Index Number of Finished Steel Orders and Sales Has Recovered Sharply From Its Low Point of a Month Ago. It now stands well above the average level of any of the past few years



three or four months. Judging by reliable reports current in the trade, concessions are being made on bars, plates and shapes in the Pittsburgh district, which seems to indicate that demand already has begun to weaken in comparison with supply.

Trend Somewhat Uncertain

IN the last month for which data are available, the orders and sales of the chief items of finished steel were good. A study of the trends, as illustrated in Fig. 2, however, shows that the situation cannot be called excellent; it might be worse, but it might be better.

The bars in the lower part of the chart indicate that the total sales and orders for the first three months of the year were only a little over the figures for 1924 and 1925, and considerably under 1923. The curve above indicates that the trend is doubtful. There was a sharp upturn in March, which was chiefly due to heavy sales of sheets. It is common knowledge, however, that the sheet business is being done at concessions and can hardly be profitable. The attitude of sheet manufacturers is reflected in the tendency toward curtailment in production of ingots in the Youngstown district.

Moreover, a considerable part of the March rise represents a merely seasonal increase, and it will be

noted that the gain was not so large as that which occurred in either 1922 or 1923. There is food for thought in the fact that in the three years 1923 to 1925, inclusive, the March peaks were followed by sharp declines.

Another item which contributed to the rise in March was the bookings of steel castings. Here again the increase was largely seasonal and the March bookings failed to come up to the January level. With the exception of 1921 and 1925, this is the only case of the kind during the last seven years.

We conclude that this barometer of the steel business made a satisfactory showing—that new business in finished steel items in March was good. The future trend, however, is uncertain, the indications based on April trade reports casting considerable doubt on the current trend.

Structural Sales Slow

BOOKINGS of structural steel gained in March, as usual. The figure, however, was smaller than in March, 1925, and differed little from that of March, 1924. In fact, the March gain was entirely seasonal. Except for 1924, the increase was the smallest which has occurred in that month during the six years shown in the chart (see Fig. 3). In view of the uncertainty as to the continuation of the building boom, the March

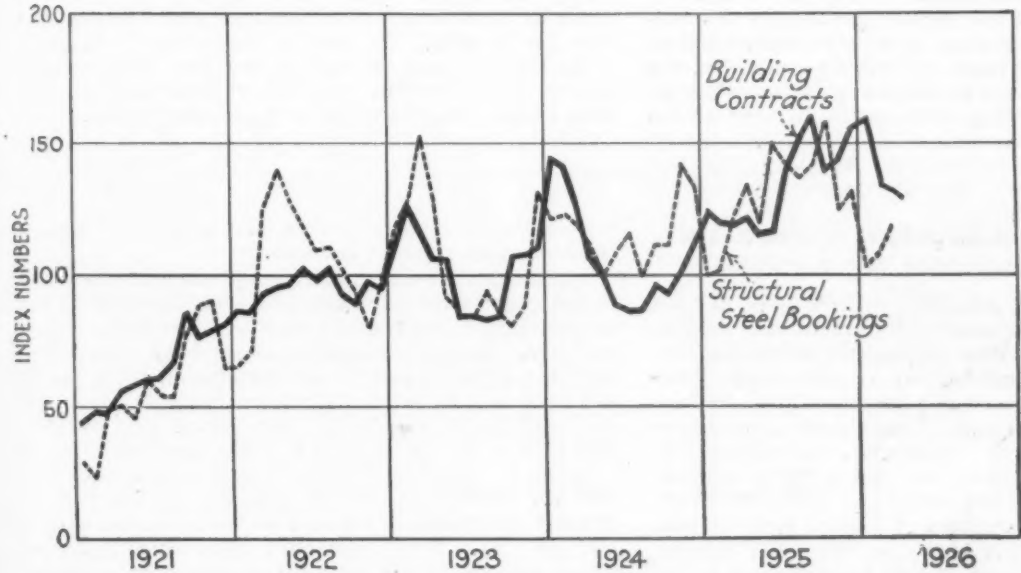


Fig. 3—Bookings of Structural Steel Usually Parallel Quite Closely the Curve of Building Contracts Awarded. They are now approaching that curve again, having been recently further below this index than at any time in the past five years

showing may be considered fairly satisfactory, but nothing stronger can be said about it.

Our adjusted index of building activity continues downward. In March there was a considerable increase in the floor space of contracts awarded, but the significant fact is that this increase was less than usually occurs in that month. In April there was a decline. The trend, therefore, is downward. The value of contemplated construction, also, showed a considerable decline in that month, when allowance is made for seasonal conditions. In a number of sections there has been a decided decline in building and only the extraordinary activity in New York City and vicinity and in Florida has prevented a sharper decline in the index of total construction.

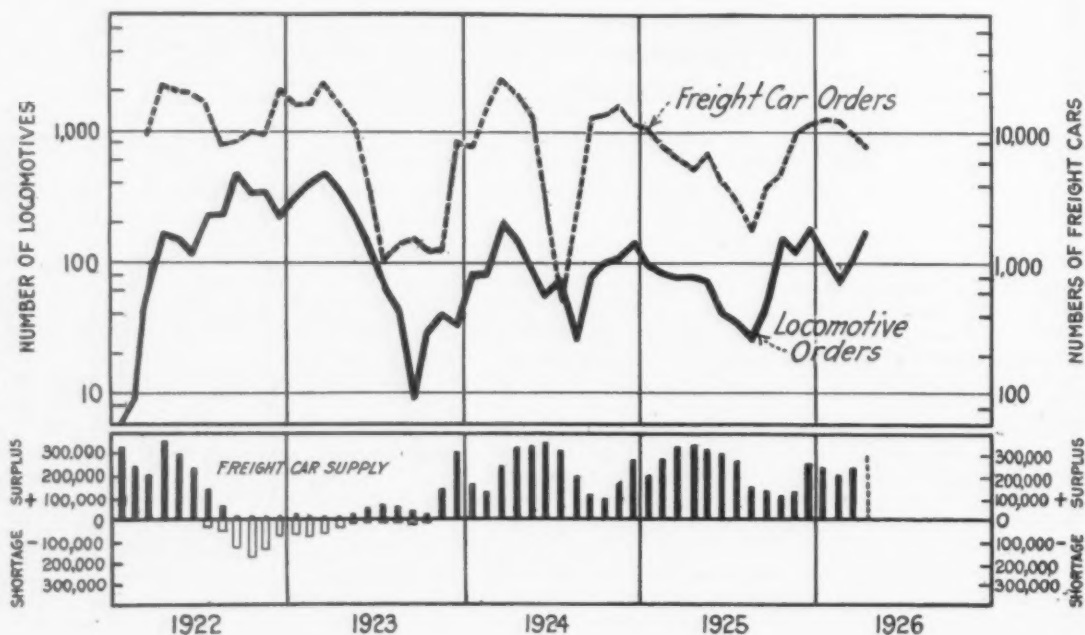
The New York University Bureau of Business Research has recently completed an inquiry among manufacturers in the northeastern part of the country, which shows that few are planning additions to their

ferred that those in charge of construction work are going slowly, thus causing awards to sag. Inquiries for structural steel, however, are reported good. The whole situation indicates a moderate and orderly decline.

#### Railroad Demand Fair

STUDY of Fig. 4 leads to the conclusion that the demand for railroad equipment is fair. The freight car situation is the least satisfactory part of the picture, only 5622 cars having been ordered in April. This is about the same as a year ago, but far less than in any of the three years preceding that. While the trend of car orders is downward, this is a usual condition in the spring. If freight traffic is as well maintained as seems probable, there is no reason why car buying should not be as good as it was last year. This is about the most that can be hoped for, as the surplus of cars held by the railroads is fairly large and the

Fig. 4 — Locomotive Orders Show an Encouraging Upturn and Freight Car Business Is Still Good Enough to Indicate Continued Demand for Steel From Equipment Manufacturers. Both curves are plotted as a 3-month moving average



plants during the next two years. Over 80 per cent of the replies to the Bureau's inquiry indicated that no building is planned for 1926 or 1927 and nearly half the remainder plan no sizable construction. A number of replies suggest that available space for manufacturing is now ample and that building costs are too high. It is evidently believed that a period of several years must elapse before any large demand for industrial construction will develop in the northeast.

In view of the easier trend in money rates and the large amount of construction already contracted for, there is no reason to look for a sharp decline in building, but it is growing more certain that the building boom has passed its peak. It will be noted that the curve of structural steel bookings continues well below that of building activity, from which it may be in-

ferred that those in charge of construction work are going slowly, thus causing awards to sag. This situation is reflected in the weakness of plates.

The demand for locomotives is more favorable. In fact, the general trend of locomotive orders appears to be upward and in April 251 locomotives were ordered—the largest monthly figure since March, 1923. Even here, however, nothing big is in sight. The number of locomotives stored in good condition is too large to permit much new buying, and railroad traffic is not likely to show more than seasonal gains during the next few months. The gist of the matter is that the locomotive business is one of the few bright spots among the industries, and fairly good business for steel makers may be expected from this quarter.

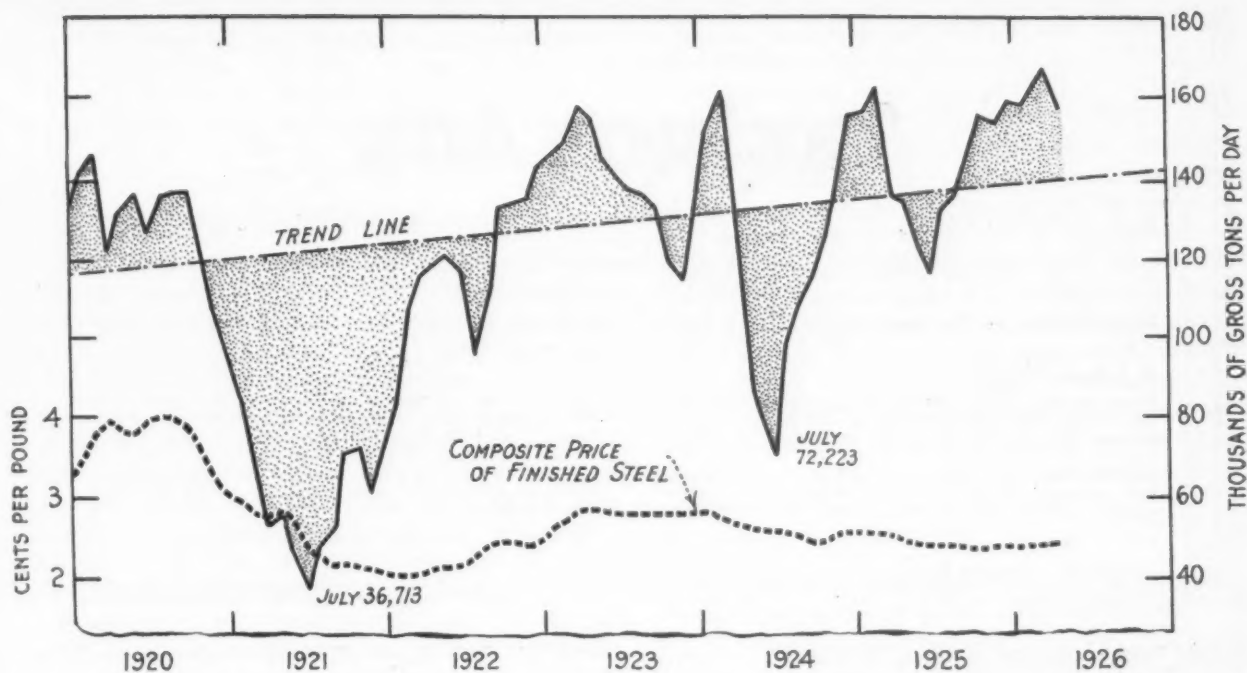
#### Wire Rod Mills Reported Dissatisfied with International Agreement

LUBECK, GERMANY, April 28.—It is believed in some quarters that the agreement of German and Belgian wire rod makers covering production, prices and distribution of world markets may be abrogated. This is based on the fact that despite semi-official declarations that the German and Belgian works show no inclination to dissolve the agreement, discrepancies in prices to British markets are beginning to appear. In addition, it is claimed that the Belgian mills are not satisfied with their quota of British business and are demanding a larger share to which the German works object. A collapse of this agreement, it is believed, would result in almost disastrous competition

between the German and Belgian wire rod makers in European and overseas markets.

Although the German Wire Syndicate includes about 98 per cent of the wire production of Germany in its membership, its control of prices is evidently far from complete. Members seeking business offer concessions from the official prices of the association, quite freely at times. For example, bright iron wire is quoted by the syndicate at £7 (\$34.02) per metric ton, and has been sold at £6 10s. (\$31.60), galvanized wire is officially on a base of £9 (\$43.75), but has sold at £8 15s. (\$38.88) per metric ton. Galvanized fencing wire is officially £12 (\$58.02) per ton, and sells as low as £11 15s. (\$57.10). Black japanned wire, which is on an official base of £7 10s. (\$36.45) is quoted by members as low as £7 2s. 6d. (\$34.63) per ton.





April Production of Steel Ingots Shows That the Daily Output was About 4.6 Per Cent Less Than That of March

## April Steel Ingot Output

Daily Rate 7623 Tons, or 4.6 Per Cent, Less Than March—Exceeds April Last Year by 15 Per Cent

STEEL ingot output for April, while less than that for March, did not decline to so low a point as it did in April, a year ago. At 158,613 gross tons per day, the April production was 7623 tons per day less than the March rate, or a decrease of 4.6 per cent. A year ago the decrease in April from March was 14.5 per cent. In March this year the increase over February was 4.9 per cent.

The April daily rate of output this year was 20,779 tons, or 15 per cent, in excess of that of April a year ago, emphasizing the fact that the reduction in output this year has been much less than a year ago.

The statistics of the American Iron and Steel Institute show that the April production for the com-

panies which made 94.50 per cent of the country's total in 1925 was 3,897,124 tons. Assuming that the 5.50 per cent not reporting produced at the same rate, a total April output is indicated of 4,123,941 tons, from which the daily rate was calculated.

A readjustment in the published data for 1925 shows that the total ingot output was 44,140,738 tons as compared with 44,186,977 tons previously published.

The table gives the reported production by months of the different kinds of steel, together with the estimated daily rate for all companies.

### Large Decrease in Steel Corporation's Unfilled Orders

Another decrease in the unfilled orders on the books of the United States Steel Corporation was reported as of April 30. The total unfilled orders amounted on that day to 3,867,976 tons, a decrease of 511,959 tons from the total of 4,379,935 tons on March 31. This is the fourth decrease since August last year, the first having been in January when it amounted to 150,625 tons, the second in February when it was 265,917 tons and the third in March when it was 236,887 tons. Decreases previous to September occurred from March to August inclusive. A year ago the unfilled business was 4,446,568 tons, or 578,592 tons more than at the end of April this year. The following table gives the unfilled tonnage as reported by months beginning with January, 1924.

Monthly Production of Steel Ingots Reported by Companies Which Made 94.50 per cent of the Steel Ingot Production in 1925

(Gross Tons)				
Months 1926	Open-hearth	Bessemer	All Other	Calculated Monthly Production All Companies
Jan. ..	3,326,846	581,683	13,664	4,150,469*
Feb. ..	3,023,829	556,031	12,818	3,801,776*
March. .	3,590,791	635,680	15,031	4,488,362*
April ..	3,282,435	601,037	13,652	4,123,941
4 Mos. 13,223,921	2,374,431	55,165	16,564,548	160,821
*Revised.				
1925				
Jan. ..	3,263,256*	689,996	11,960	4,193,281**
Feb. ..	2,933,225*	602,042	12,998*	3,752,352**
March. .	3,337,721*	614,860	13,633	4,194,340**
April ..	2,858,866*	515,715	14,182	3,583,676**
4 Mos. 12,393,068*	2,422,613	52,773*	15,723,649**	152,657**
May ..	2,755,561*	497,708	13,790	3,454,971**
June ..	2,540,729*	476,945	12,490	3,204,451**
July ..	2,446,068*	457,095	13,547	3,084,472**
Aug. ..	2,698,285*	523,734	12,914	3,420,998**
Sept. ..	2,738,673*	547,121	13,977	3,489,565**
Oct. ..	3,077,114*	584,567	15,624	3,888,814**
Nov. ..	3,092,194*	581,347	17,085	3,902,900**
Dec. ..	3,169,796*	569,304	15,843	3,970,918**
Total 34,911,488*	6,660,434	168,043*	44,140,738**	141,932**
*Revised.				
**Adjusted.				

	1926	1925	1924
Jan. 31.....	4,882,739	5,037,323	4,798,429
Feb. 28.....	4,616,822	5,284,771	4,912,901
March 31.....	4,379,935	4,863,564	4,782,807
April 30.....	3,867,976	4,446,568	4,208,447
May 31.....		4,049,800	3,628,089
June 30.....		3,710,458	3,262,505
July 31.....		3,539,467	3,187,072
Aug. 31.....		3,512,803	3,289,577
Sept. 30.....		3,717,297	3,473,780
Oct. 31.....		4,109,183	3,525,270
Nov. 30.....		4,581,780	4,031,969
Dec. 31.....		5,033,364	4,816,676

The high record in unfilled orders was 12,183,093 tons, at the close of April, 1917. The lowest was 2,674,757 tons, on Dec. 31, 1910.

ESTABLISHED 1855

# THE IRON AGE

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## After the General Strike, What?

**P**ARALYZING British industry, the general strike which began on May 4 is almost unique in the history of economics. Never before, so far as we know, have the miners, transportation men, machinists, and the personnel of almost all other trades ceased work in unison, nation-wide. The cessation of work in Russia after the Bolshevik revolution is perhaps the nearest parallel. The latter was not, however, a peaceful, deliberate affair.

The position of the British Government in the conferences preceding the present controversy was unexceptionable. At a cost of about \$100,000,000 the Government had been subsidizing the coal miners, pending composition of differences between them and their employers. The two parties had been unable to agree. The Government said they must settle things between them, that it could no longer continue a subsidy at the expense of taxpayers, many of whom earned less and worked longer hours than the coal miners.

It is hard to see what the other unions hoped to gain by participating in a measure intended to force the Government to continue the subsidy to the coal miners. We can conceive only that the unions generally wanted to test the question whether they were going to run Great Britain or whether that was to be done by a government representing the people as a whole.

We do not venture to prophesy what is going to happen out of this strike. It might be expected to collapse quickly owing to its own weight. The coal miners themselves require transportation service, while the locomotive workers need coal in their own homes. Even a strike dole is of no use if no goods are to be had. A general strike means a good deal of self-punishment. This one may spell the beginning of disintegration of labor unionism in Great Britain.

There is, however, a deeper economic problem in the issue, and one that concerns not merely Great Britain but also the United States and other countries. The British coal mining industry, like our own, is overdeveloped and overmanned. The differences are that in this Country the industry is only partly unionized, and as a whole it looms propor-

tionately smaller in importance than in Great Britain.

The real problem, both in Great Britain and the United States, is to get about 200,000 workers in each country away from coal mining, for which they are not needed, and to transfer them to other production, for which they would be useful. There is never such a condition as a people producing too much, for the maximum of production means improvement in the scale of living. There can be, however, and frequently is maladjustment in respect to the production of certain commodities. It is indeed the major problem of any national economy to keep the different branches of production in balance.

The present issue that has been raised in Great Britain is whether an overdeveloped, overmanned and unprofitable industry shall be subsidized at the expense of the State. The attempt to subsidize the American farmers through the medium of the Haugen bill now pending before our own Congress is not economically of any different order. It scarcely need be pointed out that a general program of government aid would lead into a blind alley. Under such a regime we should have claims for a greater national production than there ever is, while anything short of a general program would be grossly unfair. Common sense teaches that one citizen who is working should not be taxed to support another one who can work but does not.

Yet, how is the superfluous personnel of any industry to be diverted to others? No specific solution of this great economic problem has come into general discussion. We may say dogmatically that there is never going to be any solution of it by happy thought; nor is there going to be found any quick-acting panacea. Nevertheless, there is a solution to be found in the formula of the removal of economic restrictions, letting economic forces have free play; and that is probably the only solution, severe and slow though it may be.

The principles and precepts of labor unionism are in themselves one of the greatest of economic restrictions. With their abolition labor would be free to flow from places where not needed to other places where needed; and sooner or later the constraint of circumstances would compel such a flow.



If the outcome of the British strike unshackles British labor there will be in the end a great industrial gain and an improvement in the welfare and satisfaction of all the people of that country.

### Steel Earnings and Disbursements

WHILE the steel industry has not fallen into bad times, it is now clear that it has just ended a period of times better than the average, and the action of the Steel Corporation directorate a fortnight ago in making no increase in the dividend on the common stock may be viewed with complacency. The change made in phraseology, from a "regular" dividend plus an "extra" to a "regular" of the amount of the two, while technically important is not practically important. When a corporation with first bonds, second bonds and preferred stock preceding common stock pays a certain rate on the common for two and a half years, that is quite regular for the common stock, no matter what name the directors employ.

It may be assumed from the action taken and from the course of affairs at present that such controversy as there was on the subject is ended and remarks may now be made without their being considered argumentative.

Two statements of Andrew Carnegie have a very interesting bearing upon the times we now live in. The fact that they do not apply now is no discredit to him but furnishes an important commentary on these new conditions. The bearing of these conditions upon policy and conduct of steel producers today is brought out by the reference.

One of the things Mr. Carnegie said was: "Steel is either a prince or a pauper." It is not so now, and the wise, conservative policy of the Steel Corporation in dividends and other matters is in large part responsible. If the Steel Corporation increased its dividends sharply in good times that would encourage all steel sellers to get as high prices as they could irrespective of tonnage, and if it cut its dividends on the appearance of poor times that would encourage all sellers to get as much tonnage as they could irrespective of prices. Such a course is not desired by buyers of steel or by any other class that deserves consideration.

An interview Mr. Carnegie gave out in 1898 on the eve of a trip to Egypt is not so well remembered. He predicted a great tonnage future for steel, on the ground that three pounds could be sold for two cents (meaning \$15 billets) but said that no steel company heavily bonded could expect to succeed. Now, the Steel Corporation is heavily bonded from the viewpoint of those times, though not heavily in accordance with the style of some corporations of today, such as the railroads. The point is what style should be followed. While the corporation was heavily bonded it was not the intention that it should stay so. The first bonds were based on a 40-year liquidation, while the second were computed for 60 years, though callable after ten years.

No one denies that the steel industry should grow to take care of increasing demands. Some have come close to denying that it should be assiduous in making improvements to reduce production

cost, thus ignoring competition and refusing to recognize any duty to customers, i. e., the public.

It is quite blind to regard this matter of expenditures as a particular case. Whence have come our factories, our transportation facilities, all our physical wealth? There was a time when we got some foreign capital, but in the main we have what we have by reason of savings out of earnings. Should people get earnings out of other industries to amass capital for steel making? If so, which are the industries of this country that should take care of other industries, and which are the other industries that should thus be taken care of? Of course stockholders might invest their dividends in bonds, but no one is so simple as to fancy that is what additional dividends on steel common were wanted for.

### Raw and Finished Material Prices

COMPARISONS of price relations between raw and finished materials in iron and steel long ago and at present are suggestive of influences that make markets, showing that men with their mental attitudes have much to do with prices, and that it is not simply a matter of supply or ability to produce. The respective spreads between coke and pig iron and between pig iron and semi-finished steel have increased, while the spread between semi-finished steel and finished steel has decreased.

Comparison with prices of long ago is conveniently made by taking the averages for 1897 and 1898. Those were the years of lowest prices, but they are not taken on that account. They are particularly suitable for comparison because prices were steady. In those two years it took 5.9 net tons of Connellsville coke to equal one gross ton of Bessemer pig iron at Valley furnaces. Now the ratio is 6.2, relative to basic iron, and 6.5 relative to Bessemer iron.

Then billets were 58 per cent above Bessemer pig iron, while now they are 89 per cent above basic iron, comparison with Bessemer iron not being to the point.

On the other hand, in 1897-8 a net ton of merchant steel bars was worth in the market 22 per cent more than a gross ton of billets. Lately the increment has been only about 10 per cent. This decrease is not great, but when comparisons between raw and semi-finished materials show such increases, the divergence is very striking.

The sheet industry was so new in 1897 and 1898 that a price comparison between sheet bars and sheets is not so much to the point as the billet and merchant bar comparison; but it is of interest to note that, appraising prices as closely as can now be done, in 1897-8 sheets per net ton averaged about 2.56 times sheet bars per gross ton, or an increment of 156 per cent, while now they are about 1.75 times, or 75 per cent increment, only half as much "spread."

All production costs, of course, have increased enormously since 1898; but it cannot be supposed that the general principles involved could have borne so unequally upon the different processes as to account for these divergences in price spreads. The fundamental change has been this, that, while formerly the producers of billets and sheet bars were in principle detached from the finished steel mar-

kets, now they are attached. They are, in the main, producers of the finished products their customers make. There are enough such to make the market.

In 1897 and 1898 the sales of semi-finished steel were so large relative to total production of steel that the attitude of sellers was that of selling final products. Nowadays the sellers are influenced by the consideration that should they endeavor to force sales by cutting prices the direct and prompt result would be a decline in the finished material markets involved. The mill customer would not be benefited and the seller would have a poorer market for his own finished products. It is a case of mental attitudes, of reasoned policy, controlling; for as to supply, it is quite certain that most of the time the steel mills could make more billets and sheets bars than there is a market for.

### Compulsory Physical Reexaminations

**C**OMPANIES which have adopted compulsory physical examination of employees come in time to consider the question of systematic reexaminations. The idea is that as the years pass, following the initial examination, a worker may develop an unlooked-for weakness—heart trouble, it may be—which would make hazardous for him an employment that is usually safe enough. If such instances were common it would be well to remove the possibility, in the interest of workers and their dependents, and because of the additional costs involved in the way of workmen's compensation. If every one, so runs the theory, were reexamined at scheduled intervals this element of risk would be eliminated.

However, firms which have had years of experience with the system do not accept this view. They do not believe stated reexamination necessary or desirable. Many employees share a common human trait in objecting to physical examination. Moreover, regular reexaminations add materially to the cost of the medical department. But the chief reason why reexamination is not required is that

the system functions with entire satisfaction without it. Very rarely is it found that the unsuspected presence of a physical defect results directly or indirectly in an accident.

When the compulsory system is established in a plant, every employee, male or female, is examined carefully, after the manner of an examination preliminary to life insurance. Every person subsequently put on the payroll is similarly examined. A physical record of everyone in the plant is kept, serving as a running inventory of health. Each employee has his or her card in the hospital archives. The routine of the works acts to keep the records up to date. Naturally the system is an adjunct of the plant hospital, which is also an infirmary. When an employee is taken ill at his work he is sent to the hospital, and usually receives medicine or other treatment which soon overcomes the temporary indisposition. But once in a while there may be signs of an impaired physical state. The employee's card is brought out. He may be sent to his family doctor or to some specialist employed by the company, or to a hospital cot. Any new physical trouble is noted and presumably is added to the record card.

Or an employee may become ill at home, too ill to go to work. The usual shop rule is that anyone who has been absent longer than a specified time must return to work via the shop hospital and submit to examination.

Physical infirmities commonly reveal themselves. There is no need of examining scores of perfectly well people, many of them against their will, in order to pick out those who are not so well. Naturally there are exceptions to the rule. In the case of locomotive engineers doubtless stated physical examinations are desirable. Some railroad managements consider them imperative. But in the ordinary run of employment ailments are revealed soon enough. Then, under a considerate administration of the compulsory examination plan, the effort is made to fit the individual into other work that comes within safe limits in relation to his health.

### CORRESPONDENCE

#### Whether to Buy Power or Make It

*To the Editor:* With reference to your article in the May 6 issue, "Whether to Buy Power or Make It," two years ago we had practically the same problem, but we installed individual motors for each machine.

For our steam hammer, which we use in making hooks and shackles for our blocks, we got a motor-driven air compressor and extra large receiver. We had to change only one valve on our steam hammer to use the air. We find the air to be even more satisfactory than the steam. W. W. PATTERSON, JR.

Secretary and treasurer W. W. Patterson Co.  
Pittsburgh

Manufacturers in Philadelphia and vicinity have been victimized by a stranger who represents himself as chief engineer of the Du Pont works at Wilmington, Del., and the General Chemical Co., Marcus Hook, Pa. The man uses various names, is about 42 years old, about 5 ft. 11 in., weighs approximately 180 lb. and wears a light brown suit and a cap. He tells a story that his automobile broke down and he was robbed.

#### Vanadium Alloys Company Buys Control of Anchor Drawn Steel Co.

The Vanadium Alloys Steel Co., Latrobe, Pa., has acquired a controlling interest in the Anchor Drawn Steel Co., Latrobe, which was organized late in 1923 and started operations in July, 1924, producing cold drawn steel bars of the higher grades.

The Vanadium company will operate the Anchor company as a separate unit with Roy C. McKenna as president, George W. Morrison as vice-president in charge of operations and sales and F. B. Underwood as secretary. Mr. Morrison has been with the Anchor company since its organization, serving as vice-president in charge of operations. Mr. McKenna and Mr. Underwood are Vanadium company men. Dean R. Wilson, president, and W. W. Noble, vice-president in charge of sales, have disposed of their holdings in the Anchor company and will no longer be connected with it.

The first oil-electric locomotive to be used in the mining industry has been purchased by the Utah Copper Co. from the Ingersoll-Rand Co., joint producer with the American Locomotive Co. and the General Electric Co. It is claimed that the Utah Copper Co. will be able to save 4c. a ton on haulage of ore.



## PRINCIPLES OF WAGE PAYMENT

### Results of Investigation by Manufacturers Research Association Given at Taylor Society Meeting

A statement of the principles of wage payment advocated by the Manufacturers Research Association, Boston, was a feature of an all-day meeting of the Eastern Massachusetts section of the Taylor Society, at Cambridge, Mass., May 7. The morning session was held at the Massachusetts Institute of Technology, and the afternoon and evening sessions at Harvard University.

The study of various types of wage payment plans was begun several months ago by a committee made up of eight members of the Manufacturers Research Association. Those participating in this study included Richmond Viall, Brown & Sharpe Mfg. Co., Providence; W. P. Cahill, Graton & Knight Mfg. Co., Worcester; B. A. Hildebrand, Norton Co., Worcester; E. T. Clary, Whittin Machine Works, Whitinsville, Mass.; J. F. Dorney of the Walworth Co., Boston; and H. H. Farquhar, Harvard School of Business Administration, Boston. The wage payment plan advocated by the association was outlined by A. B. Rich, Dennison Mfg. Co., Framingham, Mass.

In making the study, present day methods of paying wages were analyzed and compared for the purpose of discovering and segregating those features which are inherent in all effective systems. The plan advocated is said to retain those features of the earlier systems of wage payment which have demonstrated their merit and to have eliminated those features of the older systems which have proved to be objectionable or inefficient. The principles advocated include three general types of wage payment: Piece work; group piece work; and day work.

The Manufacturers Research Association plan is said to preserve the following strong points of earlier systems, the soundness of which the committee felt had been demonstrated conclusively: Standards based on accurate time study; pressure on the management exerted by the system to standardize shop conditions; indication of material wastage, thereby permitting this leakage to be controlled; and indication of departure from prescribed methods of performance.

The plan was stressed as eliminating the following objectionable features inherent in some other systems: Decreasing rates per piece for added increments in production above standard; sharing the workers' savings with management; difficulty on the part of the worker of understanding the plan and computing his earnings; and time-studying operations where shop conditions have not previously been standardized. It is planned to abstract the association's plan in a forthcoming issue of THE IRON AGE.

#### Management Trends Discussed

A contribution to the meeting that was highly regarded was an address by Dr. H. S. Person, managing director of the society, on "The Management Movement." Dr. Person analyzed the changes in the industrial environment since 1890, indicated the new problems of management generated by these changes and the new practices in management caused by efforts to solve these problems. The new ideals of management inspired in turn by the new practices were also outlined.

The management movement, it was said, became vocal in 1885 in discussions of the American Society of Mechanical Engineers. The first matter to which attention was given was incentive wage systems, and the second was cost systems, discussion of which lasted for several years. Beginning with 1900, attention was focused on organization and system. The contribution of Frederick W. Taylor was discussed at length. Standardization, stability, the elimination of uncertainty was said to be the central idea of Taylor's system. The phases of management at present getting attention are analysis of tendencies (economics); administrative con-

trol; and relations with the workers. When scientific management developed with respect to production, it was for stability. The same general search was said to be on in the field of marketing, general administrative control and personnel relations.

Principles which must be recognized in setting up a system of administrative control were outlined in a paper on "Top Control," which was presented at the evening session by John H. Williams, consulting engineer, New York.

## TO DETROIT IN 1927

### Charleston Foreign Trade Convention Fosters Relations with Canada

Closer trade relations between the United States and Canada are pointed to by the participation of a large delegation of leading business men from the provinces on the North in the sessions of the National Foreign Trade Convention at Charleston last month. The presidents of the Toronto, Montreal, and Victoria boards of trade were among the speakers and there were also delegates from Vancouver and Ottawa chambers of commerce, from the Canadian Pacific and Canadian National railroads, the Royal Bank of Canada, the Canadian Bank of Commerce, the Bank of Montreal, and the Department of Trade and Commerce of the Dominion Government. These delegates turned the second general session of the convention into Canada Day, and for the first time in the history of the National Foreign Trade Council staffed a general session with foreign spokesmen.

The decision to hold next year's foreign trade convention in Detroit will develop still further the good understanding with Canadian interests. It is expected that the largest delegation of Canadian business men that has ever attended a convention in the United States will go to Detroit next June.

In his telegram to President Coolidge, acknowledging the President's greetings to the Charleston convention, Chairman James A. Farrell included a fraternal message from the 50 Canadian delegates. In his telegram of acknowledgment, the President referred particularly to the cordial expressions from the Canadian representatives.

### National Industrial Conference Board's Decennial Meeting

Marking the tenth anniversary of the National Industrial Conference Board, the members and invited guests will hold a notable meeting at the Hotel Astor, New York, on Thursday, May 20. At the forenoon session there will be reports of officers, a discussion of current industrial problems, and an analysis of the information service of the board, which has been highly valuable to all industry. There will be a number of addresses also in the afternoon and at a dinner in the evening.

The key topic of the day will be the significance of the changing economic relationships of the new industrial era upon which the United States entered at the close of the World War. Leading executives from every section of the country, representing manufacturing, mining, and transportation interests, as well as finance, will be present to take stock of the country's industries in the light of the ten years' investigation of industrial and economic problems conducted by the board.

### New Mills for Carnegie Steel Co.

YOUNGSTOWN, May 11.—At its William Tod plant, Youngstown, the United Engineering & Foundry Co. is bringing to completion a 54-in., two high blooming mill for the Homestead works of the Carnegie Steel Co. The mill is one of the heaviest ever built. The Carnegie Steel Co. placed in operation this week for the first time a new 14-in. mill at the McDonald plant, Trumbull County, giving it 20 finishing units at the McDonald, Upper and Lower Union Mill groups.

# Iron and Steel Markets

## Further Reduction in Steel Output

New Business in May Shows Increase Over April—Tin Plate  
Orders Due to British Strike—Pig Iron  
50 Cents Lower

**E**IGHT days of the general strike in Great Britain have brought indications that a considerable business in steel products and in fuel will come to this country if the conflict runs into weeks. Australian and New Zealand users of British tin plate have just ordered 20,000 boxes from American mills, and Canadian customers of Welsh producers have bought 30,000 boxes here. Other tin plate negotiations are under way, and the dislocations already produced by the strike are expected to turn demand to American mills for various forms of rolled steel.

From Hampton Roads coal shipments for the week, chiefly to South America and European ports, have been at double the rate of preceding weeks.

At Philadelphia last week pig iron imports, at 24,000 tons, were unusually large, half the total coming from England, apparently hurried in anticipation of the general strike. The strength which eastern Pennsylvania producers expected, in view of the British situation, did not come, foundry iron in that district having declined 50c. a ton on fairly substantial sales.

Pig iron production in England has been generally suspended. In the face of idle tin plate mills, some business was booked there for third quarter delivery at current prices. Germany reports that the strike has produced no definite effect on either domestic or export trade in iron and steel.

The domestic steel market has borne out recent indications of a production rate in excess of requirements and of the increasing tendency of buyers to operate on narrower inventories. A falling off in April of 512,000 tons in Steel Corporation unfilled orders and the month's daily rate of ingot output for the country only 4.6 per cent less than the record rate of March point to some further reduction in mill operations in the next few weeks.

The present readjustment is less marked than that of a year ago. Then the country's ingot output in April was 15 per cent less than in March. Also the four months of decline in the Steel Corporation's unfilled orders still leave the total 10 per cent more than that of Aug. 31, just preceding four months of increase.

New business in May thus far has come in at a better rate than in the first ten days of April. Steel Corporation bookings since May 1 have averaged 10,000 tons a day more than in the like period last month. With orders running 32,000 to 33,000 tons a day, the corporation's ingot production is now at about 90 per cent of capacity.

In Pittsburgh, Youngstown and the intermediate district steel mills are operating this week

at about 70 per cent of capacity. The Chicago district rate is considerably higher and the industry as a whole is at about 80 per cent, as against 88 per cent in April.

The effect of present conditions upon finished steel prices has not been uniform. Sheets and cold rolled strips have shown more irregularity than some of the heavier products.

Of 35,000 tons of foundry and malleable iron sold by Cleveland interests, several contracts were for the third quarter at ruling second quarter prices. In the Philadelphia district a steel maker is inquiring for 20,000 tons of basic iron for May and June. At Chicago foundry iron is 50c. a ton lower. Concessions are reported also in connection with a sale of 16,000 tons of Tennessee pig iron to an Ohio pipe works and 6000 tons of pipe iron to an Eastern plant.

Included in 43,500 tons of structural steel awards is 11,300 tons for Santa Fe Railroad bridges, 15,300 tons in two office buildings and a school in New York, and 3100 tons in a building in Washington. Twenty coal barges will take 3200 tons of steel. A municipal viaduct in New York calls for 4000 tons. Havana, Cuba, harbor improvements will require 4500 tons of reinforcing bars, while 3000 tons is called for by road construction in Pennsylvania.

Canadian structural work will bring some round tonnages to this side. The contract let for 30 steel gates for Welland Canal locks will require 16,000 tons of steel. There is also the fabrication of steel for the Montreal bridge superstructure.

At Chicago 35,000 tons of steel for oil tanks is under active inquiry.

The Springfield, Havana & Peoria Railroad has bought 6000 tons of 90-lb. rails of the Inland Steel Co. for delivery in the next three or four months.

For car construction the Southern Pacific Equipment Co., San Francisco, is seeking 3500 tons of shapes and plates.

Ore carrying rates on the Lakes have been re-established. Shading of ore prices has developed among small producers on recent sales, as has happened in the past two years.

THE IRON AGE pig iron composite price dropped this week to \$20.29 from \$20.46 in the four preceding weeks.

Finished steel fell, also, in view of a \$2 difference in sheets and \$1 in plates, the composite now standing at 2.417c. per lb., in place of the 2.439c. of the six preceding weeks. This is the low point of the year and is the lowest since October.



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At Date, One Week, One Month, and One Year Previous  
For Early Delivery

Pig Iron, Per Gross Ton:	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
No. 2X Philadelphia...	\$22.76	\$23.26	\$23.26	\$21.76
No. 2, Valley Furnace...	19.00	19.00	19.00	19.00
No. 2, Southern, Cin'ti...	25.69	25.69	25.69	24.05
No. 2, Birmingham, Ala.†	22.00	22.00	22.00	20.00
No. 2 foundry, Chicago*	21.50	22.00	22.00	21.00
Basic, del'd, eastern Pa.	21.75	21.75	21.75	21.00
Basic, Valley furnace...	18.50	18.50	18.50	18.50
Valley Bessemer, del. P'gh.	21.26	21.26	21.26	21.76
Malleable, Chicago*	21.50	22.00	22.00	21.00
Malleable, Valley .....	19.00	19.00	19.00	19.00
Gray forge, Pittsburgh...	20.26	20.26	20.26	20.26
L. S. charcoal, Chicago...	29.04	29.04	29.04	29.04
Ferromanganese, furnace.	88.00	88.00	88.00	115.00

Rails, Billets, etc., Per Gross Ton:	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
O.-h. rails, heavy, at mill.	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	<b>34.00</b>	32.00	34.00	39.20
Bess. billets, Pittsburgh...	35.00	35.00	35.00	35.50
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	35.50
O.-h. sheet bars, P'gh....	36.00	36.00	36.00	37.00
Forging billets, base, P'gh.	40.00	40.00	40.00	40.50
O.-h. billets, Phila.....	40.30	40.30	40.30	40.67
Wire rods, Pittsburgh....	45.00	45.00	45.00	46.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb...	1.90	1.90	1.90	2.00

Finished Iron and Steel,	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.22	2.22	2.22	2.22
Iron bars, Chicago.....	2.00	2.00	2.00	2.10
Steel bars, Pittsburgh...	2.00	2.00	2.00	2.00
Steel bars, Chicago.....	2.10	2.10	2.10	2.10
Steel bars, New York....	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh...	1.85	1.90	1.90	2.00
Tank plates, Chicago....	2.10	2.10	2.10	2.20
Tank plates, New York...	2.24	2.24	2.24	2.24
Beams, Pittsburgh .....	1.90	1.90	1.90	2.00
Beams, Chicago .....	2.10	2.10	2.10	2.20
Beams, New York.....	2.24	2.24	2.24	2.34
Steel hoops, Pittsburgh...	2.50	2.50	2.50	2.40

Sheets, Nails and Wire,	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.15	3.25	3.25	3.20
Sheets, black, No. 28, Chi-				
cago dist. mill.....	3.35	3.35	3.45	3.40
Sheets, galv., No. 28, P'gh.	4.40	4.50	4.50	4.30
Sheets, galv., No. 28, Chi-				
cago dist. mill.....	4.60	4.70	4.70	4.50
Sheets, blue, 9 & 10, P'gh.	2.40	2.40	2.40	2.40
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.60	2.60	2.60	2.50
Wire nails, Pittsburgh...	2.65	2.65	2.65	2.75
Wire nails, Chicago dist.				
mill .....	2.70	2.70	2.70	2.85
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill .....	2.55	2.55	2.55	2.60
Barbed wire, galv., P'gh...	3.35	3.35	3.35	3.45
Barbed wire, galv., Chi-				
cago dist. mill.....	3.40	3.40	3.40	3.55
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
Carwheels, Chicago .....	\$15.50	\$15.50	\$16.50	\$16.00
Carwheels, Philadelphia ..	17.50	17.50	17.50	17.00
Heavy steel scrap, P'gh...	15.75	16.00	17.00	17.00
Heavy steel scrap, Phila...	15.50	15.50	16.00	14.50
Heavy steel scrap, Ch'go...	12.25	12.25	13.50	14.75
No. 1 cast, Pittsburgh....	16.50	16.50	16.50	17.50
No. 1 cast, Philadelphia...	17.50	17.50	17.50	17.00
No. 1 cast, Ch'go (net ton)	16.00	16.00	16.50	17.00
No. 1 RR. wrot. Phila....	17.50	17.50	17.50	17.50
No. 1 RR. wrot. Ch'go (net)	11.00	11.25	12.75	13.25

Coke, Connellsville,	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
Per Net Ton at Oven:				
Furnace coke, prompt....	\$2.90	\$3.00	\$3.00	\$3.00
Foundry coke, prompt ....	4.00	4.00	4.00	4.00

Metals,	May 11, 1926	May 4, 1926	Apr. 13, 1926	May 12, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	14.00	14.00	14.00	13.62½
Electrolytic copper, refinery	13.62½	13.62½	13.62½	13.37½
Zinc, St. Louis.....	6.75	6.70	7.15	6.97½
Zinc, New York.....	7.10	7.05	7.50	7.32½
Lead, St. Louis.....	7.55	7.60	7.65	7.62½
Lead, New York.....	7.75	7.85	8.00	7.97½
Tin (Straits), New York...	64.50	63.25	63.75	54.50
Antimony (Asiatic), N. Y.	12.75	12.50	17.25	17.50

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.  
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

## Pittsburgh

### Demand for Pipe Growing, Other Lines Dull—Mill Output at 70 Per Cent

PITTSBURGH, May 11.—The steel market is giving ground in bookings and plant engagement, while in some products the recession is extending to prices. The demand for pipe is growing, but in all other finished products demands are down to the proportions of actual necessities. So much steel has been produced and shipped over the past five months that steel manufacturers have drawn heavily on their order books and current demands are not sufficient to sustain the recent rate of ingot output.

It is doubtful if the industry in this and nearby districts is producing at more than 70 per cent of capacity. In the Youngstown district only 31 of the 53 independent open-hearth furnaces are in production. Another blast furnace has been taken off at the Johnstown works of Bethlehem Steel Co., and the Carnegie Steel Co. has dropped a furnace of its Edgar Thomson group. The market for merchant pig iron is so limited in relation to outlet that it is a frequent prediction that several merchant furnaces are apt to be forced down in the next four to six weeks.

Pig iron prices are untested and nominal, and the steel market is without support from the scrap market, which has declined further since a week ago. Furnace coke prices, after holding steady for several weeks at \$3 per net ton at ovens, have softened in the past few days.

It begins to look as though the recession in activity which has appeared so frequently in recent years at this time as to be regarded as a seasonal occurrence, is at hand. Demands of the automotive industry have diminished considerably in the past week. Sales of cars to owners have not been equal to production, and there is the additional factor that a number of manufacturers are doing the designing and engineering work in connection with new models, which will make their appearance in six or seven weeks.

The most pronounced weakness in steel prices is in sheets and cold-rolled strips, and the reduced demand from the automotive industry is largely responsible. When there is insufficient business to engage the capacity for making automobile body sheets, producers of that grade naturally seek an outlet for their products in other finishes. In cold-rolled strips, the automobile industry constitutes the principal channel of consumption, and with that industry buying less, sales effort in other directions becomes more intensive. That there is a fair measure of price stability in other directions finds its explanation in the fact that production is being curtailed. In plates, however, the market appears to be slightly less stable, and it does not take quite so large a tonnage as recently to bring out a price of 1.85c., base, Pittsburgh.

Completion of last fall's standard-section rail business does not appear to be very far off, and this is a loss of tonnage that will not be replaced until next autumn. The sharp decrease in the unfilled orders of the Steel Corporation in April does not occasion much surprise locally because it has been well known that the Corporation was operating well beyond incoming

business and was eating into its backlog. Even with the drop of 512,000 tons last month the total decrease so far this year is 355,173 tons less than the gain in the last four months of 1925.

**Pig Iron.**—A quieter market than exists in this market is difficult to imagine. There is absolutely no interest on the part of large consumers, and business is developed among the smaller ones only through intensive sales efforts. Not only are sales few, but it is exceptional for the individual transaction to cover more than a carload. Consumers are not concerned over the possibility of higher prices, because merchant production is running well ahead of the requirements of the trade, and there is also the possibility that with lower steel plant operations some of the steel makers will have surplus pig iron to market. It is doubtful if much business would be developed by lower prices, and for that reason producers are holding to their recent quotations. It is not helpful to the pig iron market that spot coke is now available at lower prices than have recently ruled.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$18.50
Bessemer .....	19.50
Gray forge .....	18.50
No. 2 foundry .....	19.00
No. 3 foundry .....	18.50
Malleable .....	\$19.00 to 19.50
Low phosphorus, copper free....	27.50

**Ferroalloys.**—The British strike is without effect on the ferromanganese market, because only a small amount of British material was sold for delivery to this country and shipping has not been affected to the extent that the movement of ore is affected. With ample domestic production and consumption decreasing in keeping with lighter steel works operations, to say nothing of the fact that American steel manufacturers, as has been their custom in recent years, usually maintain three to four months' reserve supply, it will take a tieup of labor abroad of much longer duration than the present one is expected to be to have any effect on the situation. Market conditions here are unchanged; there is good specifying against contracts, but almost no new business. In 50 per cent ferrosilicon there is steady specifying, but too many users are covered by rather flexible contracts, so far as supplies are concerned, to be much concerned about new supplies. New business in spiegeleisen is light, and the supply situation is slightly easier than it was in the first quarter of the year. Prices are given on page 1375.

**Semi-Finished Steel.**—There are few steel manufacturers who buy their steel who have found it necessary to supplement what they carried over from first quarter purchases, and this quarter so far has been a very quiet one in new sales. Such sales as have been made have usually carried the first quarter prices, or \$35, Pittsburgh or Youngstown, for large billets and slabs, and \$36 for sheet bars and small billets and slabs. But the business offered has presented no real test of prices, and that is the situation also in wire rods, demands for which lately have been very small. Open market activity in skelp is limited, despite the fact that

pipe stands out as the most active of any of the finished products. Prices are given on page 1375.

**Wire Products.**—There is a steady, if moderate, demand for nails, wire and other wire products, but it does not call for much more than 50 per cent operation of mill capacity. There were rather extensive preparations by manufacturers for a good spring business, which has failed to materialize, and mill stocks are sufficient to take care of much of the current demand. The low rate of mill operation has another explanation in that price preservation would be difficult with even a 75 per cent operation at today's rate of demand. The market really is steady. Prices are given on page 1373.

**Rails and Track Supplies.**—Competition for light rail business appears to have abated since last accounts, and companies which recently went as low as \$32, mill, on orders a little more attractive than the general run, again are quoting \$34 and taking a firm stand at that price. Small sales of billet rafts are being made at that price, but the light rate of coal mine operation in this and nearby territory and the narrow margin of profit in coal, makes for conservative buying of light sections. The time was when light rails commanded more than standard sections, but for some time they have sold for less and the differential has widened, since there has been heavy production of standard sections this year and of steel in general and it is the standard-section rail and billet crops that are the raw material for light rails. No standard-section rail business of consequence is developing in this district and the movement of the track accessories also is sluggish. Prices are given on page 1373.

**Tubular Goods.**—Demands for standard pipe are growing steadily, and with a good demand also for oil country goods, the lot of the pipe producers is more favorable than that of most of the other makers of finished products. There is a good deal of urgency to the demand for standard pipe, indicating rather moderate stocks in jobbers' hands in relation to the demands being made upon them. The prospect still is bright for considerable line pipe, particularly for the recently developed Texas Panhandle field. Prices are firm, which is noteworthy in view of the fact that the past two years have seen approximately 750,000 tons added to the annual capacity in welded pipe, while there also has been a substantial increase in seamless pipe capacity. Boiler tubes are selling fairly well, but the general demand is not sufficient to sustain higher prices than have ruled for some time. Discounts are given on page 1373.

**Sheets.**—No appreciable increase is observed in the demand, and the desire for orders is increasing to the extent that many manufacturers will take smaller tonnages at their minimum prices. On black sheets 3.15c., base, Pittsburgh, has become more common and on galvanized sheets it is a rather small tonnage that will not bring out a price of 4.40c., base, Pittsburgh. The leading producer has made no change in its prices, still quoting 3.25c. to 3.35c., base, Pittsburgh, on black, and 4.50c. to 4.60c., Pittsburgh, on galvanized. Gen-

## THE IRON AGE Composite Prices

### Finished Steel

May 11, 1926, 2.417c. Per Lb.

One week ago.....	2.439c.
One month ago.....	2.439c.
One year ago.....	2.460c.
10-year pre-war average.....	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1926	2.453c.,	Jan. 5:	2.417c.,	May 11
1925	2.560c.,	Jan. 6:	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15:	2.460c.,	Oct. 14
1923	2.824c.,	April 24:	2.446c.,	Jan. 2

### Pig Iron

May 11, 1926, \$20.29 Per Gross Ton

One week ago.....	\$20.46
One month ago.....	20.46
One year ago.....	19.71
10-year pre-war average.....	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1926	\$21.54,	Jan. 5:	\$20.29,	May 11
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	March 20:	20.77,	Nov. 20



# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

Soft Steel	
	Base Per Lb.
F.o.b. Pittsburgh mills.....	2.00c.
F.o.b. Chicago.....	2.10c.
Del'd Philadelphia.....	2.32c.
Del'd New York.....	2.34c.
Del'd Cleveland.....	2.19c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
C.i.f. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing	
F.o.b. Pittsburgh mills.....	2.00c.

Rail Steel	
F.o.b. mill.....	1.80c. to 1.90c.
F.o.b. Chicago.....	2.00c.

Iron	
Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates	
	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.85c. to 1.90c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c. to 2.19c.
Del'd Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
C.i.f. Pacific ports.....	2.25c. to 2.30c.

Structural Shapes	
	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c. to 2.19c.
Del'd Philadelphia.....	2.12c. to 2.22c.
Del'd New York.....	2.19c. to 2.24c.
C.i.f. Pacific ports.....	2.30c. to 2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)	
	Base Per Lb.
All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.

Cold-Finished Steel	
	Base Per Lb.
Bars, f.o.b. Pittsburgh mills.....	2.50c.
Bars, f.o.b. Chicago.....	2.50c.
Bars, Cleveland.....	2.55c.
Shafting, ground, f.o.b. mill.....	2.70c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.75c.
Strips, f.o.b. Cleveland mills.....	3.75c.
Strips, delivered Chicago.....	4.05c.
Strips, f.o.b. Worcester mills.....	4.05c.

\*According to size.

Wire Products	
(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)	
	Base Per Keg
Wire nails.....	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1 in.....	4.90
Galvanized staples.....	3.35
Polished staples.....	3.10
Cement coated nails.....	2.65

Base Per 100 Lb.	
Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire.....	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.35
Barbed wire, painted.....	3.10
Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.	

Woven Wire Fence	
Base to Retailers Per Net Ton	
F.o.b. Pittsburgh.....	\$65.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

## Sheets

Blue Annealed	
	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh.....	2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills.....	2.60c.
Nos. 9 and 10, del'd Philadelphia.....	2.72c.

Box Annealed, One Pass Cold Rolled	
No. 28, f.o.b. Pittsburgh.....	3.10c. to 3.25c.
No. 28, f.o.b. Ch'go dist. mill.....	3.35c. to 3.45c.
No. 28, del'd Philadelphia.....	3.47c. to 3.57c.

Galvanized	
No. 28, f.o.b. Pittsburgh.....	4.40c. to 4.50c.
No. 28, f.o.b. Chicago dist. mills.....	4.60c. to 4.70c.
No. 28, del'd Philadelphia.....	4.72c.

Tin Mill Black Plate	
No. 28, f.o.b. Pittsburgh.....	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill.....	3.45c.

Automobile Body Sheets	
No. 22, f.o.b. Pittsburgh.....	4.30c.

Long Ternes	
No. 28, 8-lb. coating, f.o.b. mill.....	4.85c.

Tin Plate	
	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	5.60

Terne Plate	
(F.o.b. Morgantown or Pittsburgh)	
(Per package, 20 x 28 in.)	
8-lb. coating, 100.....	20-lb. coating I.C. \$16.20
1b. base.....\$11.40	25-lb. coating I.C. 17.90
8-lb. coating I.C. 11.70	30-lb. coating I.C. 19.45
15-lb. coating I.C. 14.85	40-lb. coating I.C. 21.65

Alloy Steel Bars	
(F.o.b. Pittsburgh or Chicago)	
S. A. E. Series Numbers	Base Per 100 Lb.
2100* (1/2% Nickel, 0.10% to 0.20% Carbon).....	\$3.20 to \$3.25
2300 (3/4% Nickel).....	4.50
2500 (5% Nickel).....	5.70 to 5.80
3100 (Nickel Chromium).....	3.50
3200 (Nickel Chromium).....	5.00 to 5.25
3300 (Nickel Chromium).....	7.00 to 7.25
3400 (Nickel Chromium).....	6.25 to 6.50
5100 (Chromium Steel).....	3.40 to 3.50
5200* (Chromium Steel).....	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.30 to 4.40
6100 (Chrom. Vanad. spring steel).....	3.80
9250 (Silicon Manganese spring steel).....	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.).....	4.30 to 4.40
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.).....	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.).....	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum).....	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2 in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

\*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails	
	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	34.00
Light (from rail steel), f.o.b. mill.....	32.00
Light (from billets), f.o.b. Ch'go mill.....	36.00 to 38.00

## Track Equipment

(F.o.b. Mill)	
	Base Per 100 Lb.
Spikes, 1/2 in. and larger.....	\$2.80 to \$3.00
Spikes, 1/2 in. and smaller.....	2.85 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	4.00 to 4.50
Tie plates, steel.....	2.25 to 2.35
Angle bars.....	2.75

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills	
Butt Weld	
Steel	Iron
Inches	Black Galv.
1/2.....	19 1/2 to 21 +39
3/4.....	25 1/2 to 28 1/2 +22
1.....	25 1/2 to 28 1/2 +22
1 1/4.....	25 1/2 to 28 1/2 +22
1 1/2.....	25 1/2 to 28 1/2 +22
1 3/4.....	25 1/2 to 28 1/2 +22
2.....	25 1/2 to 28 1/2 +22
2 1/2.....	25 1/2 to 28 1/2 +22
3.....	25 1/2 to 28 1/2 +22
3 1/2.....	25 1/2 to 28 1/2 +22
4.....	25 1/2 to 28 1/2 +22
4 1/2.....	25 1/2 to 28 1/2 +22
5.....	25 1/2 to 28 1/2 +22
5 1/2.....	25 1/2 to 28 1/2 +22
6.....	25 1/2 to 28 1/2 +22
6 1/2.....	25 1/2 to 28 1/2 +22
7.....	25 1/2 to 28 1/2 +22
7 1/2.....	25 1/2 to 28 1/2 +22
8.....	25 1/2 to 28 1/2 +22
8 1/2.....	25 1/2 to 28 1/2 +22
9.....	25 1/2 to 28 1/2 +22
9 1/2.....	25 1/2 to 28 1/2 +22
10.....	25 1/2 to 28 1/2 +22
10 1/2.....	25 1/2 to 28 1/2 +22
11.....	25 1/2 to 28 1/2 +22
11 1/2.....	25 1/2 to 28 1/2 +22
12.....	25 1/2 to 28 1/2 +22

Lap Weld	
2.....	55 43 1/2
2 1/2 to 6.....	59 47 1/2
7 and 8.....	56 43 1/2
9 and 10.....	54 41 1/2
11 and 12.....	53 40 1/2
Butt Weld, extra strong, plain ends	
1/2.....	41 24 1/2
3/4 to 1.....	47 30 1/2
1 1/2.....	53 42 1/2
2.....	58 47 1/2
1 to 1 1/2.....	60 49 1/2
2 to 3.....	61 50 1/2
Lap Weld, extra strong, plain ends	
2.....	53 42 1/2
2 1/2 to 4.....	57 46 1/2
4 1/2 to 6.....	56 45 1/2
7 to 8.....	52 39 1/2
9 and 10.....	45 32 1/2
11 and 12.....	44 31 1/2

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1 1/2 points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh	
Lap Welded Steel	Charcoal Iron
2 to 2 1/2 in.....	27 1 1/2 in. +18
2 1/2 to 2 3/4 in.....	37 1 1/2 to 1 3/4 in. +8
3 in.....	40 2 to 2 1/4 in. -2
3 1/2 to 3 3/4 in.....	42 2 1/2 to 3 in. -7
4 to 13 in.....	46 3 1/2 to 4 1/2 in. -9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes	
Cold Drawn	
1 in.....	60 3 in. 45
1 1/4 to 1 1/2 in.....	52 3 1/4 to 3 1/2 in. 47
1 1/2 in.....	36 4 in. 50
2 to 2 1/4 in.....	31 4 1/2, 5 and 6 in. 45
2 1/4 to 2 3/4 in.....	39

Hot Rolled	
2 and 2 1/4 in.....	34 3 1/4 and 3 1/2 in. 50
2 1/4 and 2 3/4 in.....	42 4 in. 58
3 in.....	48 4 1/2, 5 and 6 in. 48

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing	
Per Cent Off List	
Carbon, 0.10% to 0.30%, base.....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.	

erally, however, the minimum prices of this company are the maximum quotations of other mills. The demand for automobile body sheets still leaves much to be desired. Automobile production is reasonably high, but there is a general tendency to keep down inventories, as it is now felt that much spring retail business has been lost definitely, since many who have cars and figured on getting new ones, will now defer the purchase until the new models begin to come out in July and August. Lack of the usual amount of automobile sheet business increases competition for mills making ordinary black sheets. Mill operations range from 65 to 70 per cent of capacity. Prices are given on page 1373.

**Tin Plate.**—There has been no material slackening of tin mill operations, but new business is light and manufacturers cannot look very far ahead and figure sustained operations, because shipments for the year to date have probably exceeded those for any similar period in the history of the business. Moreover, container manufacturers have sizable inventories, while there is some doubt about the fruit and vegetable crops on account of the late spring. If the suspension of British industry is of long enough duration, it might be helpful to export business in American tin plate.

**Cold-Finished Steel Bars and Shafting.**—Demand is steady enough, but it is not for large lots, nor are buyers departing from a policy of short term buying, which makes for frequent scheduling of mills and the carrying by makers of large and assorted stocks to be able to make the deliveries wanted. Prices are holding well at 2.50c., base, Pittsburgh, for ordinary tonnages.

**Steel and Iron Bars.**—The ordinary tonnage price on steel bars here remains at 2c., base, Pittsburgh, but demands, while reasonably steady, are no tax upon capacity, and very prompt deliveries are being made on all sizes. Iron bars are slow, but makers are holding to recent prices.

**Structural Steel.**—The market is holding fairly well at 1.90c., base Pittsburgh, for large structural shapes, but that price usually refers to the day-to-day demands for ordinary tonnages, and on really attractive business prices are subject to special consideration. Steel fabricators note a good volume of inquiry, but the complaint is common that competition is sharp and prices low and unprofitable.

**Plates.**—The effort on the part of most makers in this district is to maintain a price of 1.90c., base Pittsburgh, but reports of 1.85c. are more frequently heard, and that price has been done on business of a size that could not have been placed that low a few weeks ago. Railroad car business generally is light, and the dependence of the mills here is largely on large outside-diameter pipe and river barges. Awards of the latter in the past week account for 3500 tons and 10 more barges which will probably be placed soon will take 1500 tons.

**Hot-Rolled Flats.**—Buyers are not taking supplies much ahead of their actual requirements, but their needs are sufficient to provide a steady demand and

the mills are having no difficulty in maintaining recent prices.

**Cold-Rolled Strips.**—The market in this product is very quiet, due to the recession in the demands of the automotive industry, and almost every piece of business that now develops is subject to exceptionally active competition. While the usual quotation in this district is 3.75c., base Pittsburgh, there are indications that in some sections of the country and on larger business lower prices have been made.

**Bolts, Nuts and Rivets.**—Business in these lines continues to recede, and bookings are making a rather unfavorable showing as compared with those in the first four months of the year. Production, however, is declining with demand, and prices are holding. They are given on page 1375.

**Warehouse Business.**—Sales of steel products out of warehouses in this district are running smaller. The year to date has made a rather poor showing as compared with the same period last year, March having been the only good month this year. Prices are steady on all lines except sheets, in which the decline in mill prices is being reflected.

**Coke and Coal.**—Production of furnace coke again is in excess of contract requirements, and the spot market is weaker. Blast furnaces now in operation and running on Connellsville beehive oven coke are taking only their minimum quotas, and pig iron producers depending on spot tonnages for part of their requirements, lately have been able to buy at \$2.90 per net ton at ovens, and \$3, although still obtainable, is growing hard to secure. Prices below \$3 for furnace coke do not yield producers a fair profit, and it is probable that the decline in price will lead to further curtailment of output. Foundry coke is still plentiful at \$4 to \$4.50 for good brands for spot shipment. The coal market, as for some time past, is entirely a buyers' affair. It is reported that a sizable lot of screened Connellsville coal recently was sold at \$1.50 per net ton at mines, which would mean about \$1.25 for run-of-mine grade. Prices are given on page 1375.

**Old Material.**—Prices here are still headed downward, and more sales of heavy melting steel at \$16 have clearly demonstrated that price is all the grade will command. Indeed, as low as \$15.75 has been done since a week ago. Offerings of scrap are large in relation to the demand, and the market is favorable to buyers. Sales that are being made do not represent requirements, but rather are dictated by a belief that the material is cheap and will help bring down the cost average of purchasers. There are some dealers who will not sell at today's prices, contending that they cannot buy the material cheaply enough to make a profit. Local prices on steel works grades are low in comparison with those in the East, but against that is the continued weakness in the West and the fact that Western mills which are enjoying the best finished steel business are very sparing buyers. The Norfolk & Western is taking bids until noon, May 12, on 8482 gross tons of scrap.

We quote for delivery to consumer's mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

**Per Gross Ton**

Heavy melting steel.....	\$15.75 to \$16.00
No. 1 cast, cupola size.....	16.50 to 17.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa. ....	18.00 to 18.50
Compressed sheet steel.....	15.00
Bundled sheets, sides and ends...	14.00
Railroad knuckles and couplers...	17.50 to 18.00
Railroad coil and leaf springs...	17.50 to 18.00
Low phosphorus blooms and bil- let ends.....	20.00 to 20.50
Low phosphorus plates and other material.....	18.50 to 19.00
Low phosphorus punchings.....	18.50 to 19.00
Steel car axles.....	21.00 to 21.50
Cast iron wheels.....	17.00 to 17.50
Rolled steel wheels.....	17.50 to 18.00
Machine shop turnings.....	11.00 to 11.50
Short shoveling turnings.....	12.00 to 12.50
Sheet bar crops.....	18.00 to 18.50
Heavy steel axle turnings.....	15.00 to 15.50
Short mixed borings and turnings	12.00 to 12.50
Heavy breakable cast.....	15.00 to 15.50
Cast iron borings.....	12.00 to 12.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	15.75 to 16.00
Malleable scrap.....	17.00 to 17.50

**Warehouse Prices, f.o.b. Pittsburgh**

	Base per Lb.
Tank plates.....	3.00c.
Structural shapes.....	3.00c.
Soft steel bars and small shapes.....	2.90c.
Reinforced steel bars.....	2.90c.
Black sheets (No. 28 gage), 25 or more bundles.....	4.10c.
Galvanized sheets (No. 28 gage), 25 or more bundles.....	5.15c.
Blue annealed sheets (No. 10 gage), 25 or more sheets.....	3.55c.
Cold-finished shafting and screw stock— Rounds and hexagons.....	3.60c.
Squares and flats.....	4.10c.
Bands.....	3.60c.
Spikes, large.....	3.30c.
Small.....	3.80c. to 5.25c.
Boat.....	3.80c.
Bolts, track.....	4.90c.
Wire, black soft annealed, base per 100 lb. \$3.00	
Wire, galvanized soft, base per 100 lb. \$3.00	
Common wire nails, per keg.....	3.00
Cement coated nails.....	3.05



# Semi-Finished Steel, Raw Materials, Bolts and Rivets

## Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

### Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over.....	\$35.00
Rolling, 2-in. and smaller.....	36.00
Forging, ordinary.....	40.00
Forging, guaranteed.....	45.00

### Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

### Slabs

	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
6 in. x 2 in. and smaller.....	36.00

### Skelp

	Per Lb.
Grooved.....	1.90c.
Sheared.....	1.90c.
Universal.....	1.90c.

### Wire Rods

	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock.....	\$5.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

\*Chicago mill base is \$46. Cleveland mill base, \$45.

## Prices of Raw Materials

### Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	Per Unit

Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus.....	45c.
Manganese ore, Brazilian or Indian, nominal.....	42c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$12.00 to \$13.00
Chrome ore, Indian basic, 48% Cr <sub>2</sub> O <sub>3</sub> , crude, c.i.f. Atlantic seaboard.....	\$22.00 to \$23.00
Molybdenum ore, 85% concentrates of MoS <sub>2</sub> , delivered.....	55c. to 60c.

### Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt.....	\$2.90 to \$3.00
Foundry, f.o.b. Connellsville prompt.....	4.50
Foundry, by-product, Chgo ovens.....	9.75
Foundry, by-product, New England, del'd.....	12.50
Foundry, by-product, Newark or Jersey City, delivered.....	10.50 to 11.52
Foundry, Birmingham.....	5.00 to 5.50
Foundry, by-product, St. Louis or Granite City.....	10.00

### Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines.....	\$1.40 to \$1.90
Mine run coking coal, f.o.b. W. Pa. mines.....	1.50 to 1.75
Mine run gas coal, f.o.b. Pa. mines.....	1.90 to 2.10
Steam slack, f.o.b. W. Pa. mines.....	1.30 to 1.40
Gas slack, f.o.b. W. Pa. mines.....	1.40 to 1.50

### Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$88.00 to \$95.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	\$88.00 to 110.00

### Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$32.00 to \$34.00
Domestic, 16 to 19%.....	31.00 to 33.00

### Electric Ferrosilicon

	Per Gross Ton Delivered
50%.....	\$85.00
75%.....	145.00
	Per Gross Ton Furnace
10%.....	\$42.00
11%.....	42.00
12%.....	42.00
14 to 16%.....	\$45 to 46.00

### Bessemer Ferrosilicon

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace.....	\$33.00
10%.....	33.00
11%.....	35.00
12%.....	\$37.00

### Silvery Iron

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace.....	\$25.50
6%.....	26.50
7%.....	27.50
8%.....	27.50
9%.....	29.00
	Per Gross Ton
10%.....	\$31.00
11%.....	33.00
12%.....	35.00

### Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd.....	\$1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered.....	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace.....	\$3.25 to \$4.00
Ferrocobaltititanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. An-niston, Ala., per net ton.....	\$122.50

### Fluxes and Refractories

#### Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$17.50 to \$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$17.25 to \$17.75
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

#### Fire Clay

	Per 1000 f.o.b. Works
	High Duty Moderate Duty
Pennsylvania.....	\$43.00 to \$46.00 \$40.00 to \$43.00
Maryland.....	48.00 to 50.00 43.00 to 45.00
New Jersey.....	55.00 to 75.00
Ohio.....	43.00 to 45.00 40.00 to 43.00
Kentucky.....	43.00 to 45.00 40.00 to 43.00
Illinois.....	40.00 to 43.00 35.00 to 38.00
Missouri.....	40.00 to 43.00 35.00 to 38.00
Ground fire clay, per ton.....	6.50 to 7.50

#### Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania.....	\$40.00
Chicago.....	49.00
Birmingham.....	50.00
Silica clay, per ton.....	\$8.00 to 9.00

#### Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.....	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.....	40.00

#### Chrome Brick

	Per Net Ton
Standard size.....	\$45.00 to \$48.00

## Mill Prices of Bolts, Nuts, Rivets and Set Screws

### Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Per Cent Off List

Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads.....	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts.....	60, 10 and 10
Flow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, 1/4 x 4 in., 45, 10 and 5	
Larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	50, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list	
C.p.c. and t. square or hex. nuts, blank or tapped.....	4.10c. per lb. off list
Washers*.....	6.50c. to 6.25c. per lb. off list

\*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

### Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

Per Cent Off List

Semi-finished hexagon nuts:	
1/2 in. and smaller, U. S. S.....	80, 10 and 5
3/4 in. and larger, U. S. S.....	75, 10 and 5
Small sizes, S. A. E.....	80, 10 and 5
S. A. E., 1/2 in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk.....	80, 10, 5 and 2 1/2
Tire bolts.....	60 and 5

### Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E. U.S.S.	Per 100 Net S.A.E. U.S.S.
1/4-in.....	\$0.44 \$0.44	3/4-in..... \$2.35 \$2.40
3/8-in.....	0.515 0.515	1-in..... 3.60 3.60
1/2-in.....	0.62 0.66	1 1/4-in..... 5.65 5.80
3/4-in.....	0.79 0.90	1 1/2-in..... 8.90 8.90
1-in.....	1.01 1.05	1 3/4-in..... 12.60 13.10
1 1/4-in.....	1.38 1.42	2-in..... 18.35 18.35
1 1/2-in.....	1.70 1.73	2 1/2-in..... 21.00 21.00

Larger sizes.—Prices on application.

### Large Rivets

Base Per 100 Lb.

F.o.b. Pittsburgh.....	\$2.50 to \$2.60
F.o.b. Cleveland.....	2.70
F.o.b. Chicago.....	2.75

### Small Rivets

Per Cent Off List

F.o.b. Pittsburgh.....	70 and 10
F.o.b. Cleveland.....	70 and 10
F.o.b. Chicago.....	70 and 10

### Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

Per Cent Off List

Milled cap screws.....	80 and 10
Milled standard set screws, case hardened, 80 and 5	
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. S. thread, 80, 10 and 10	
Upset hex. cap screws, S.A.E. thread, 80, 10 and 10	
Upset set screws.....	80, 10 and 5
Milled studs.....	70 and 5

## Chicago

### Heavy Structural Awards—Pig Iron Declines 50c.—Galvanized Sheets Lower

CHICAGO, May 11.—The coming week will see a change in blast furnace operations in this district, if present plans are carried out. The Wisconsin Steel Works, which has had all three of its stacks in blast, contemplates blowing out one for relining, and the Inland Steel Co., now taking iron from its new 700-ton furnace, will blow out its No. 3 stack for repairs to its top. The Inland furnace, however, will probably be put back in service within a week or 10 days, in order that obligations against pig iron transactions may be filled and also to put some metal on the ground. The Steel Corporation still has 21 furnaces in blast and is converting the entire output into rolled steel products.

Specifications for finished steel products have increased and are again approximately equal to shipments. New business continues to taper off slightly and is not so heavy as during the previous week. Buying is still at close range, although the larger users are taking steel in more liberal quantities. Less is heard of price shading on plates, shapes and bars, even in connection with large purchases.

Merchant pig iron has declined 50c. a ton at local furnaces.

**Pig Iron.**—Foundry and malleable iron have declined 50c. a ton to \$21.50, base Chicago furnace. Buying is still confined closely to actual requirements, and only a few users are showing interest in pig iron for third quarter delivery. Shipments so far in May average about the same as during the month of April. A Milwaukee user is in the market for 500 tons of low phosphorus iron and a Chicago district melter is inquiring for 300 tons of 10 per cent Bessemer ferro-silicon. Two carloads of Southern iron have been sold at \$21, base Birmingham, for delivery into southern Michigan. Silvery is active, although most sales are small and call for immediate delivery. A Chicago user took 200 tons of the 10 per cent grade at current quotations for delivery through June and July. A few scattered small sales of charcoal iron are noted at \$26, furnace, or \$29.04, delivered.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25 .....	\$21.50
Northern No. 1 foundry, sil. 2.25 to 2.75 .....	22.00
Malleable, not over 2.25 sil. ....	21.50
High phosphorus .....	21.50
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago .....	29.04
Southern No. 2 (all rail) .....	\$27.01 to 28.01
Southern No. 2 (barge and rail) ..	26.18 to 27.18
Low phos., sil. 1 to 2 per cent, copper free .....	\$1.20 to 31.70
Silvery, sil. 8 per cent .....	32.29
Ferrosilicon, 14 to 16 per cent. ....	45.79

**Ferroalloys.**—Spiegeleisen is \$1 lower in this market. Several small sales of the 19 to 21 per cent grade are reported at \$33, Hazzard, Pa., or \$40.76, delivered Chicago. For large tonnages for delivery through the third quarter \$32 is being offered, but users appear to be disinclined to commit themselves that far ahead at the present time. Buyers are well covered in ferromanganese for the remainder of the year, and sales, which are light, are at \$88, seaboard, or \$95.56, delivered.

We quote 80 per cent ferromanganese, \$95.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$40.76, delivered Chicago.

**Plates.**—Plate schedules at local mills are well advanced, due largely to the demand for this commodity for building and tank construction work. Sizable railroad car inquiries are absent from this market, and there are no indications as to when an interest in cars will revive. Three thousand tons of plates, shapes and

bars required for the 300 cars placed last week by the Texas & Pacific have not been awarded, although the trade looks for an announcement as to where these cars will be built within the next few days. The Standard Oil Co. of Indiana has placed with Chicago mills 2600 tons of plates for still construction, and a new inquiry for oil tankage from Oklahoma and Texas calls for 6000 tons of steel. The Roxana Petroleum Corporation contract is very active and may be signed any day. Makers estimate that not less than 35,000 tons of tankage material is now actively on inquiry. If there is a change in the price situation, it is toward greater strength, and 2.10c. remains the current quotation from Chicago district mills.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

**Sheets.**—Galvanized sheets are weaker, now being quoted at 4.60c. to 4.70c., base Chicago district mills. Mill schedules in black and galvanized sheets are very light, while blue annealed deliveries range from six to eight weeks. The electrification of the sheet mills of the Inland Steel Co. is practically completed and all units are again in operation.

Chicago delivered prices from mill are 3.40c. to 3.50c. for No. 28 black; 2.65c. for No. 10 blue annealed; 4.65c. to 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

**Structural Material.**—The tendency of the plain material price within the past two weeks to ease away from 2.10c., Chicago, seems to have disappeared. Building activity in this district continues at a substantial rate, and fabricators are experiencing no difficulty in keeping well balanced operating schedules. Plasterers, not having been granted their demands, have gone out on a strike, but it is too early to determine what effect this move will have on the building industry as a whole. The outstanding structural awards of the week have come from the railroads, the Santa Fe having placed over 11,000 tons for bridge construction and the Chicago & Western Indiana 1350 tons for track improvements in Chicago. There is disagreement as to the probability of the Agricultural Mart getting definitely under way this year, but fabricators who are estimating that job have asked for figures on 72,000 tons of plain material.

The mill quotation on plain material is 2.10c. per lb., base, Chicago.

**Bars.**—Soft steel bar bookings by local mills are fully 10 per cent greater than during the previous week. Some of this increase in demand is coming from reinforcing bar dealers, but there is also greater activity on the part of the manufacturing trade, such as makers of cold-drawn bars, screws, bolts and rivets. Large users are ordering more liberally. Chicago mills are quoting 2.10c. for soft steel bars, and this price is stronger than for several weeks past. Railroads appear to have covered all of their immediate requirements for bar iron, and new business from other sources is very light. Mills are operating on a hand-to-mouth basis. The price of iron bars is steady at 2c., Chicago. The demand for forging bars is good, showing little change from that of the first quarter. New buying of rail steel bars is about equal to shipments, although within the week there has been a noticeable falling off in the demand for bedstead angles. Requirements of reinforcing bar users are fairly heavy, compensating for whatever falling off has occurred in other lines.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c., base, Chicago; rail steel bars, 2c., base, Chicago.

**Cold-Rolled Strip.**—This commodity is now quoted at 3.75c. per lb., base Cleveland, or 4.05c., delivered Chicago. Buyers are placing orders conservatively and indicate that the stocks are low by demanding prompt shipments.

**Cold-Finished Steel Bars.**—Prices are steady at 2.50c., Chicago. There is little change in the demand, except from the automobile trade, which producers find to be spotty.



**Billets.**—There is a good demand for rolling billets, 4 in. and over. Local mills have booked this week close to 8000 tons. The price remains \$35 per gross ton, Chicago.

**Wire Products.**—Business from the jobbing trade is considerably in excess of that for the previous week. This demand is widespread, coming from all parts of the country. Dealers' stocks, which were moving sluggishly during the greater part of April and early in May, are now being taken out fairly rapidly. Farm and crop conditions have improved as a result of warmer weather. The manufacturing trade shows a slight upturn this week, and urgent demands are being made upon mills for prompt shipment. Mill stocks remain about stationary and are fairly well balanced, so that customers' needs are being taken care of promptly. Wire mill operations range from 60 to 65 per cent of capacity. Prices are steady and are shown on page 1373.

**Rails and Track Supplies.**—Several miscellaneous rail orders have added 3500 tons to Chicago makers' books. New business in track fastenings for the week is light, including 5000 kegs of spikes and bolts and 1000 tons of angle bars. There is little demand for light rails, which are still quotable at \$36 to \$38 per gross ton.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. per lb. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. mill; angle bars, 2.75c. mill.

**Bolts, Nuts and Rivets.**—Specifications are running light, and spot buying is in small volume. Requirements of the farm implement industry are not heavy, but the trade expects specifications from that source to increase as production schedules in harvesting machinery get under way.

**Reinforcing Bars.**—Awards for the week were few, but fresh inquiry is in good volume. Small tonnage projects are numerous, and many contracts requiring about 50 tons each are being booked by bar benders. Shops are fairly busy, but operations a year ago at this time were a trifle heavier. The Chicago Board of Education is expected to close soon for 450 tons. An outstanding feature of the market here is the large number of hotels and apartment hotels which are in the making. The local labor dispute is not settled, and it is uncertain as yet what influence it will have on building in this territory. Warehouses are quoting 2.60c., Chicago, for billet steel reinforcing bars. Lettings and fresh inquiries are shown on page 1389.

**Cast Iron Pipe.**—The market is more active, and a number of large tonnage contracts have been placed. Chicago quotations are steady at the prices carried below. Shipments continue in good volume and are showing a tendency to become further extended. One private inquiry is before the trade for 700 tons, and another calls for about 1800 tons. It is understood here

that Detroit will divide 2197 tons of 6-in. pipe between the United States Cast Iron Pipe & Foundry Co., the American Cast Iron Pipe Co. and the National Cast Iron Pipe Co. Chicago has awarded 1100 tons of 6 to 12-in. Class B pipe to the National Cast Iron Pipe Co. Evansville, Ind., placed 400 tons of 6, 8 and 12-in. Class B with the National company. The American Cast Iron Pipe Co. took 310 tons of 4 and 6-in. Class B pipe for Whitehouse, Ohio. Birmingham, Mich., will receive tenders May 12 on 40 tons of 14-in. Class C, 200 tons of 10-in. Class C, 40 tons of 8-in. Class B and 10 tons of 6-in. Class B. Bids will be opened May 13 by Wayne, Mich., on 150 tons of 6-in. Class B. A county job at Youngstown, Ohio, will require 500 tons of pipe, and Melvindale, Mich., is inquiring for 650 tons of 16-in. and 150 tons of 8-in. Class C.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in., \$53.20 to \$54.20; 6-in. and over, \$49.20 to \$50.20; Class A and gas pipe, \$4.

**Coke.**—By-product foundry coke shipments are heavy, and with all ovens lighted, producers are not able to accumulate stock. Quotations are \$9.75, ovens, or \$10.25, delivered in the Chicago switching district.

**Old Material.**—The market is dull and the prices of many grades of scrap have declined. A small tonnage of heavy melting steel brought \$12.75 early in the week, but quotations now range from \$12.25 to \$12.50. Large users are well stocked with heavy melting steel and are buying only in sufficient quantity to keep stocks at about present levels. Iron angle bars are weaker and will not bring above \$13.50. This grade, on a recent Chicago & North Western list, brought \$13 per net ton on track, or \$13.50, delivered. A local steel mill bought a small tonnage of hydraulic sheets at \$11 per gross ton, but offers later in the week were not above \$10.75. There is a fair demand for the cast grades, and dealers are having some difficulty in supplying the requirements of users in rolled steel wheels. Outlying yards are said to have fairly good stocks, while Chicago yards are not heavily stocked and are being operated with very small forces. The Louisville & Nashville list of this week contained 4000 tons of rerolling rails. New offerings include 8000 tons by the Chesapeake & Ohio, 2500 tons by the Chicago & Alton and 750 tons by the Grand Trunk.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

#### Per Gross Ton

Heavy melting steel.....	\$12.25 to \$12.50
Frogs, switches and guards, cut apart, and miscellaneous rails.....	13.75 to 14.25
Shoveling steel.....	12.00 to 12.25
Hydraulic compressed sheets....	10.25 to 10.75
Drop forge flashings.....	9.00 to 9.50
Forged, cast and rolled steel car wheels.....	16.50 to 17.00
Railroad tires, charging box size.....	16.75 to 17.25
Railroad leaf springs, cut apart....	16.50 to 17.00
Steel couplers and knuckles.....	15.50 to 16.00
Coil springs.....	17.00 to 17.50
Low phos. punchings.....	15.50 to 16.00
Axle turnings, foundry grade....	13.00 to 13.50
Axle turnings, blast furn. grade.....	11.25 to 11.75
Relaying rails, 56 to 60 lb.....	25.00 to 26.00
Relaying rails, 65 lb. and heavier.....	26.00 to 31.00
Rerolling rails.....	15.50 to 16.00
Steel rails, less than 3 ft.....	16.50 to 17.00
Iron rails.....	13.50 to 14.00
Cast iron borings.....	10.00 to 10.50
Short shoveling turnings.....	10.00 to 10.50
Machine shop turnings.....	7.50 to 8.00
Railroad malleable.....	16.50 to 17.00
Agricultural malleable.....	15.50 to 16.00
Angle bars, steel.....	14.50 to 15.00
Cast iron car wheels.....	15.50 to 16.00

#### Per Net Ton

No. 1 machinery cast.....	16.00 to 16.50
No. 1 railroad cast.....	15.00 to 15.50
No. 1 agricultural cast.....	14.75 to 15.25
Stove plate.....	12.75 to 13.25
Grate bars.....	12.25 to 12.75
Brake shoes.....	11.25 to 11.75
Iron angle and splice bars.....	13.00 to 13.50
Iron arch bars and transoms....	13.50 to 19.00
Iron car axles.....	23.50 to 24.00
Steel car axles.....	17.00 to 17.50
No. 1 railroad wrought.....	11.00 to 11.50
No. 2 railroad wrought.....	11.00 to 11.50
No. 1 busheling.....	9.25 to 9.75
No. 2 busheling.....	5.50 to 6.00
Locomotive tires, smooth.....	15.50 to 16.00
Pipes and flues.....	8.50 to 9.00

#### Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Mild steel bars.....	3.00c.
Reinforcing bars, billet steel.....	2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Hoops.....	4.15c.
Bands.....	3.65c.
No. 28 black sheets.....	4.10c.
No. 10 blue annealed sheets.....	3.50c.
No. 28 galvanized sheets.....	5.25c.
Standard railroad spikes.....	3.55c.
Track bolts.....	4.55c.
Structural rivets.....	3.50c.
Boiler rivets.....	3.70c.
Per Cent Off List	
Machine bolts.....	.50 and 5
Carriage bolts.....	.47 1/2
Coach or lag screws.....	.55 and 5
Hot-pressed nuts, square, tapped or blank, 3.25c. off per lb.	
Hot-pressed nuts, hexagons, tapped or blank, 3.75c. off per lb.	
No. 8 black annealed wire, per 100 lb.....	\$3.30
Common wire nails, base, per keg.....	3.05
Cement coated nails, base per keg.....	3.05

## Cleveland

### Pig Iron Sales Total 35,000 Tons—Black Sheets Lower

CLEVELAND, May 11.—Business in finished steel is being maintained at about the level established with the curtailment in orders a few weeks ago. With some mills the volume is fair and with others it is light. Business with most consuming industries is holding up well, although there has been some slowing down in production by bolt and nut manufacturers. No recent change is reported in the automotive industry, which continues to operate at a fairly satisfactory rate. Two Cleveland automobile plants have temporarily held up shipments of material, pending a consolidation of manufacturing facilities. Orders for steel from Detroit automobile builders show an improvement, which is probably due to a release of material for May production.

Alloy steel mills are still comfortably filled with orders. However, alloy steel prices lack strength, and it is intimated that round-lot inquiries might bring out concessions. The demand for plates has slowed down, and one local plate mill has curtailed operations. An inquiry for 600 tons of plates for oil tank and refinery work is being figured on by shops in this territory. Some new demand has sprung up from agricultural implement manufacturers for rail steel bars and angles. In the building field new inquiry for structural material is rather light. The Detroit & Toledo Shore Line Railroad is inquiring for 1000 tons of rails to supplement its previous purchase.

A local inquiry is pending for 2000 base boxes of tin plate for export to Australia, this evidently having resulted from a possibility that the British strike may shut off shipments from that country. Steel bars are firm at 2c., Pittsburgh. Some effort is still being made to secure concessions from 1.90c. on plates, but apparently without success. Structural material is holding at 1.90c.

**Pig Iron.**—The market developed considerable activity the past week, with more business booked than in any previous week for two or three months. Total sales by Cleveland interests aggregated approximately 35,000 tons, all in foundry and malleable grades. Sales include one lot of 3500 tons and another of 2500 tons. There is little activity in the Cleveland territory, although one Cleveland foundry bought 1000 tons. Several consumers placed contracts for the third quarter at ruling second quarter prices, apparently being satisfied that the market is not going lower. One interest sold 4000 to 5000 tons for that delivery and has several third quarter inquiries still pending. Sales by another producer, amounting to 8000 tons, were all for small lots for early delivery, none of the orders being for over 500 tons. A number of the buyers are running out of iron and are asking for immediate shipments. Competition has become keener. The market has a weak undertone, and some of the producers are showing more of a tendency to reach out from their generally recognized territories and name prices that will meet the competition of furnaces having lower freight rates. In the Cleveland and Valley districts \$18.50, furnace, has become a fairly common price on foundry and malleable iron for shipment to competitive points, although Valley furnaces are still holding for \$19 to points where they do not have to meet competition from other production centers. Some

Valley iron is being sold in Michigan at around \$18.50, furnace, making the delivered price about the same as quoted by the nearby furnaces. It was this Valley competition that led Cleveland furnaces recently to reduce their prices 50c. a ton to \$19.50 at furnace for Cleveland delivery, making their delivered price 26c. lower than Valley iron at \$18.50, furnace. Prices in Michigan are easier, ranging from \$20.50 to \$21, furnace. Competitive conditions are causing some irregularity in western Ohio and Indiana, where the common Lake iron quotation is \$20.50, furnace. A Pittsburgh district consumer is in the market for 500 tons of low phosphorus iron, on which a Valley producer is holding to \$27.50, furnace.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a \$3.02 freight rate from Jackson and \$6.01 from Birmingham:

Basic, Valley furnace.....	\$18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25.....	20.00
Southern fdy., sil. 1.75 to 2.25.....	\$26.51 to 28.01
Malleable.....	20.00
Ohio silvery, 8 per cent.....	30.52
Standard low phos., Valley furnace.....	27.50

**Iron Ore.**—Sales during the week included 100,000 tons of ore purchased by a steel company and divided among several ore firms, and a number of small lots. One new inquiry has come out for 25,000 tons. Some price shading has developed in recent sales, but this has come from small producers who often do not adhere closely to regular prices. However, the largest concession reported is 15c. a ton. As a whole, the market is firmer than it was this time a year ago.

The vessel carrying rates for Lake Superior ore that prevailed last year have been reestablished for 1926. These are 70c. per ton from ports at the head of Lake Superior, 63c. a ton from Marquette, and 52½c. a ton from Escanaba to Lake Erie ports and 42c. from Escanaba to Lake Michigan ports. On May 1 there were 4,575,390 gross tons of Lake Superior ore on Lake Erie docks, as compared with 4,303,162 tons on the same date a year ago. Shipments from docks during April were 949,578 tons, as compared with 1,559,411 tons during April last year.

**Semi-Finished Steel.**—Specifications are light, and new business is limited to small lots. Sheet mills are reported to be reducing their stocks of sheet bars as much as possible. Regular quotations are being maintained.

**Bolts and Nuts.**—Demand for bolts and nuts is not holding up to recent volume, and some of the manufacturers have slightly curtailed production. Orders from the automotive industry are not so heavy as they were. Prices are being firmly maintained. Large rivets are moving slowly, practically all the business being in specifications against contracts carrying a price of \$2.60 per 100 lb. Small rivets are moving in good volume.

**Sheets.**—While a few of the mills report some improvement in sheet business, many producers have got nearer to the end of their orders. Consequently the need for tonnage has become more urgent, and price concessions have become more frequent. On black sheets the price of 3.05c., Pittsburgh, reported last week, has been repeated in several quotations, particularly for immediate specifications. Some sales, if full extras were charged, were made on a basis of 3.10c., and 3.15c. has become a more common price. Galvanized sheets are weaker and 4.40c., Pittsburgh, is now a fair representation of the market. Some buyers claim to have been quoted as low as 4.25c. on this grade, but a number of mills are still holding to 4.50c. Blue annealed sheets are standing the strain and holding generally to 2.40c. No concessions are reported from 4.30c. on automobile body sheets. Barrel manufacturers are still carrying large stocks of sheets. Some buyers, after delaying purchases, are demanding almost impossible delivery dates on sheets that require considerable time for finishing operations.

**Strip Steel.**—Mills appear to be holding at 3.75c., Cleveland and Pittsburgh, for round lots of cold-rolled strip steel, although efforts to get a higher price for small lots have been abandoned. Hot-rolled strip is firm

#### Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars.....	3.00c.
Cold-finished rounds and hexagons.....	3.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	3.65c.
No. 28 black sheets.....	4.10c.
No. 10 blue annealed sheets.....	3.25c.
No. 28 galvanized sheets.....	5.25c.
No. 9 annealed wire, per 100 lb.....	\$3.00
No. 9 galvanized wire, per 100 lb.....	3.45
Common wire nails, base, per keg.....	3.00



at regular quotations. A fair volume of cold-rolled strip is coming from the automotive industry, but mills have little tonnage ahead in either material.

**Reinforcing Bars.**—Building work remains at a standstill in Cleveland because of the building labor strike, and the placing of new work is being withheld until building operations are resumed. Rail steel bars are unchanged at 1.80c., mill.

**Warehouse Business.**—The local building strike has resulted in a decrease in the demand for steel from jobbers' stocks. The demand for sheets from the country districts has improved. Sheet prices are irregular but other prices are firm.

**Coke.**—Demand for foundry coke is confined to small lots, largely in specifications against contracts. Prices are unchanged at \$4 to \$5.50, ovens, for standard Connelville brands. Ohio by-product foundry coke is quoted at \$7.75, ovens, for May shipment. There is no demand for by-product coke for domestic purposes.

**Old Material.**—The McKinney Steel Co., which has held up shipments of machine shop turnings for several months, released deliveries of that material during the past week. This has given the blast furnace grades a little firmer tone in the local market, although it has not caused any advance in prices. Most dealers had covered against their McKinney orders, so that this release is not expected to stimulate buying. Dealers are buying small lots of scrap to fill old orders, paying \$11.50 for mixed borings and turnings and \$14 for heavy melting steel, delivered to Cleveland mills. Generally, the market shows a weak tendency, with prices unchanged but untested.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel.....	\$13.50 to \$13.75
Rails for rolling.....	15.75 to 16.00
Rails under 3 ft.....	17.00 to 17.50
Low phosphorus billet, bloom and slab crops.....	18.00 to 18.50
Low phosphorus sheet bar crops.....	18.00 to 18.75
Low phosphorus plate scrap.....	18.00
Light plate scrap.....	17.00
Low phosphorus forging crops.....	17.00 to 17.50
Cast iron borings.....	10.75 to 11.00
Machine shop turnings.....	10.25 to 10.50
Mixed borings and short turnings.....	10.75 to 11.00
Compressed sheet steel.....	12.75 to 13.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	13.50 to 13.75
Railroad malleable.....	19.50 to 20.00
Light bundled sheet stampings.....	11.50 to 11.75
Steel axle turnings.....	13.50 to 14.00
No. 1 cast.....	16.50 to 17.00
No. 1 bushing.....	11.00 to 11.25
Drop forge flashings.....	12.00 to 12.50
Railroad grate bars.....	13.00 to 13.25
Stove plate.....	13.00 to 13.25
Pipes and flues.....	11.50 to 12.00

## Succeeds Alley & Page in New York

Alley & Page, Inc., New York and Boston, furnace representatives and dealers in pig iron, are liquidating after 13 years of activity. James C. Alley continues with the same accounts at the New York office, 261 Broadway, and will handle the liquidation of the business. Rufus W. Page, who has been in the Boston office of the company, has been appointed resident manager for Hickman, Williams & Co., which have taken over the Boston office of Alley & Page, Inc.

James C. Alley and Rufus W. Page have long been identified with the pig iron business in the East. In the early 1880's they were connected with Stevenson, Peirson & Co., continuing with C. L. Peirson & Co., which in turn was succeeded by J. Brooks Fenno & Co. Alley & Page, Inc., was formed in 1913 and succeeded to the business of J. Brooks Fenno & Co. Throughout this period Mr. Alley has been active in the New York district and is continuing under his own name as the successor to Alley & Page, Inc. Mr. Page during the same period has been identified with the Boston territory.

Steel production is well sustained this week in the Mahoning Valley, with steel ingot output above 70 per cent. More tonnage is being booked from the automobile industry at Detroit and prices are holding firm in rolled steel. Of 68 open-hearth furnaces, 51 are active, while 106 of 127 sheet and jobbing mills are under power.

## Philadelphia

### Foundry Pig Iron Breaks 50c. a Ton on Larger Buying—Steel Demand Fair

PHILADELPHIA, May 11.—An enlarged demand for foundry pig iron, the best, in fact, in many weeks, has brought with it a break of 50c. a ton in prices. Concessions of this amount appeared two or three weeks ago on the larger orders, but mostly in the form of equalization of freight rates with furnaces having the lowest rate. At the outset of the British labor strike the news was given out that prices were again firm at a \$22 base, but some sellers made sales during the week on a \$21.50 base, and this has now become the quoting price with one or two furnaces. About 15,000 to 20,000 tons of foundry iron was bought, largely at the lower level, and 20,000 tons of basic iron is pending and probably will be purchased this week.

Steel buying keeps up at a moderately good rate. Although there are some reports that tonnage so far this month is not quite up to that of the same number of days in April, this is by no means the general experience, as some mills have booked tonnage equal to that of the corresponding period last month. Prices are unchanged except on sheets and on cold-rolled strip steel, in which there is further weakness.

The scrap market is dull, but there were slight advances on machine shop turnings, bundled sheets, stove plate and grate bars, due to more active buying of these grades.

**Pig Iron.**—Whatever hopes the Eastern pig iron trade entertained as to strengthening of prices here as a result of conditions arising from the British labor strike went a-glimmering during the week when furnaces of this district competed actively for a substantial amount of business in foundry iron. Orders totaled 15,000 to 20,000 tons, and some of the larger tonnages brought out concessions of 50c. a ton. Such concessions had become fairly numerous before the British strike, but mainly as equalization of freight rates; when the strike occurred they were withdrawn, but reappeared in a more definite form late last week. The trade here does not connect the larger demand for iron with the British strike, but believes it to have been a logical event in view of the fact that many consumers were not covered through this quarter. Most of the iron bought is for delivery in May and June, but some runs through July and August. A large user of basic iron which, on its last purchase, covered its requirements only through May, has consumed more iron than it expected to, and is now in the market for 20,000 tons to carry through the remainder of this month and June. The business probably will be closed on the basis of \$21.75 to \$22, delivered. Foreign iron prices have not stiffened materially, although for some of the better grades an importer has succeeded in obtaining an advance of 50c. a ton. However, German iron has been sold at less than \$20, duty paid, Philadelphia.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.....	\$22.26 to \$22.76
East Pa. No. 2X, 2.25 to 2.75 sil.....	22.76 to 23.26
East Pa. No. 1X.....	23.26 to 23.76
Virginia No. 2 plain, 1.75 to 2.25 sil.....	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.....	28.17 to 29.17
Basic delivered eastern Pa.....	21.75 to 22.25
Gray forge.....	22.00 to 22.50
Malleable.....	22.50 to 23.00
Standard low phos. (f.o.b. furnace).....	22.00 to 23.00
Copper bearing low phos. (f.o.b. furnace).....	23.50 to 24.00

**Ferromanganese.**—There is no change in the situation, quotations remaining at \$88 to \$90, but there is practically no buying.

**Billets.**—Small sales have confirmed the existing prices on billets, namely \$35, Pittsburgh, for rerolling quality and \$40 for forging quality.

**Plates.**—Small-lot plate business continues in fairly good volume and mill operations so far this month are not falling far behind those of April. Last month one of the leading Eastern plate mills booked 90 per cent of as much tonnage as it shipped. No deviation from 1.90c., Pittsburgh, is reported.

**Structural Shapes.**—Although mostly in small tonnages, the amount of structural steel business continues satisfactory to the mills. In the case of the largest Eastern producer, mill schedules are fairly well filled for six or eight weeks, and this is a much better backlog than exists in other rolled products. This mill reports that specifications for the first 10 days of May were slightly in excess of those received in the first 10 days of April. The price situation remains unchanged. Some mills are quoting as low as 1.80c. and 1.85c., Pittsburgh, on the more desirable tonnages, while others hold to 1.90c.

**Bars.**—Reports of sales of steel bars at 1.90c., Pittsburgh, have been difficult to confirm, and may originate from sales of bar size shapes at this figure, a practice sometimes resorted to by structural mills in selling small shapes to structural customers. Merchant bars seem to be fairly firm at 2c., Pittsburgh. Bar iron is quoted at 2.22c., Philadelphia.

**Sheets.**—On black sheets the price range now is 3.15c. to 3.25c., Pittsburgh, while on galvanized sheets 4.40c. is commonly quoted, and 2.40c. is the usual quotation on the more desirable lots of blue annealed, with an occasional quotation of 2.35c., Pittsburgh.

**Warehouse Business.**—There has been a sharp decline in the demand for steel out of stock, possibly due to the fact that some of the mills are able to make much quicker deliveries. Local jobbers have reduced No. 28 black sheets to 4.55c. and No. 28 galvanized sheets to 5.75c. Other prices remain unchanged and are shown in a table below.

**Imports.**—Included in 23,840 tons of pig iron which came into the port of Philadelphia last week was 12,086 tons from England, which possibly was shipped in anticipation of the labor strike. Of the other countries which shipped iron in, Germany furnished the next largest quantity, 6500 tons, while 2504 tons came from India, 2000 from France, 700 from Belgium and 50 from the Netherlands. Other imports were as follows: Iron ore from Algeria, 6411 tons; chrome ore from Portuguese Africa, 2300 tons; steel bars from Belgium, 329 tons; steel bars from Germany, 412 tons, and from Sweden, 48 tons; charcoal iron from Sweden, 26 tons.

**Old Material.**—Four grades of scrap showed a little strength during the week on more active purchasing, but the market as a whole remains dull and unchanged. The commodities affected were machine shop turnings, bundled sheets, stove plate and grate bars. One company made fairly substantial purchases of all four grades at slight advances, but as soon as its wants were supplied, reverted to its former offering prices. A buyer of heavy melting steel has been attempting to obtain a tonnage at \$15.50, but the market situation

is such that brokers are unwilling to commit themselves on anything but small lots at this figure. However, at the moment nothing higher is obtainable. Relatively the eastern Pennsylvania market is now higher on some grades than the Pittsburgh market, and while this situation continues no marked improvement is looked for in this district.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$15.50 to \$16.00
Scrap rails .....	15.50 to 16.00
Steel rails for rolling .....	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under.....	20.00 to 20.50
Couplers and knuckles.....	18.50 to 19.00
Rolled steel wheels.....	18.50 to 19.00
Cast iron car wheels.....	17.50 to 18.00
No. 1 railroad wrought.....	17.50 to 18.00
No. 1 yard wrought.....	16.50 to 17.00
No. 1 forge fire.....	14.00
Bundled sheets (for steel works).....	13.00 to 13.50
Mixed borings and turnings (for blast furnace) .....	12.50 to 13.00
Machine shop turnings (for steel works).....	13.00 to 13.50
Heavy axle turnings (or equivalent) .....	15.00
Cast borings (for steel works and rolling mill).....	13.50
Cast borings (for chemical plant).....	15.50 to 16.00
No. 1 cast.....	17.50 to 18.00
Heavy breakable cast (for steel works) .....	16.00 to 16.50
Railroad grate bars.....	13.50 to 14.00
Stove plate (for steel works).....	13.50 to 14.00
Wrought iron and soft steel pipes and tubes (new specifications).....	15.00 to 15.50
Shafting .....	21.00 to 22.00
Steel axles .....	22.50 to 23.00

## New York

### Pig Iron Weaker—Export Inquiries for Steel Attributed to British Strike

NEW YORK, May 11.—The receipt of news that negotiations are under way between the British government and labor has brought to a halt speculation as to the effects of the English strike on the American pig iron market. The British situation has undoubtedly had a psychological influence on buyers in this district, but this will be removed if the strike is settled. Shipments of iron from abroad have not yet been interrupted, but anxiety lest deliveries might be delayed caused a number of melters to place rush orders for small tonnages. A New Jersey buyer, for example, bought two lots for prompt shipment, one of 100 tons and another of 150 tons. It is also reported that eastern Pennsylvania furnaces booked about 4000 tons of pipe iron which, in the absence of the strike, might have gone to foreign stacks. Prices on Continental and other foreign irons remain substantially unchanged, most Continental irons being available at \$20 to \$20.50, duty paid port of entry, and other brands at somewhat higher prices. Buffalo iron is firm at \$21, base furnace, for foundry grades, but eastern Pennsylvania iron has declined 50c. a ton to \$21.50, base furnace. Navigation has opened on the Erie Canal and the rate to New York by barge is \$2.75, making a delivered price on Buffalo No. 2 foundry iron of \$23.75 in the local lighterage limits. Total sales in this district during the past week are estimated at 10,000 tons. A surprisingly large proportion of the tonnage sold was for spot shipment, indicating that melters' stocks are very low. The Gould Coupler Co. has bought 1000 tons for Depew, N. Y. It is understood that the business did not go to a Buffalo stack. The A. P. Smith Mfg. Co., East Orange, N. J., is inquiring for 300 tons each of No. 2 plain and No. 2X foundry iron for third quarter. Pending inquiry is not large, probably not exceeding 3000 tons. Virginia foundry iron is weaker, now being available at as low as \$22, base furnace. A Buffalo merchant furnace has been put out.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East Pa. No. 2 fdy., sil. 1.75 to 2.25 .....	\$24.02 to \$24.52
East Pa. No. 2X fdy., sil. 2.25 to 2.75 .....	24.52 to 25.02
East Pa. No. 1X fdy., sil. 2.75 to 3.25 .....	25.02 to 25.52
Buffalo fdy., sil. 1.75 to 2.25 (all-rail)....	25.91
Buffalo fdy., sil. 1.75 to 2.25 (by barge canal, del'd alongside in lighterage limits, N. Y. and Brooklyn).....	23.75
No. 2 Virginia fdy., sil. 1.75 to 2.25 .....	27.54 to 29.54

### Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, $\frac{3}{8}$ -in. and heavier .....	2.80c. to 3.00c.
Tank steel plates, $\frac{1}{2}$ -in. ....	3.00c.
Structural shapes .....	2.75c. to 2.90c.
Soft steel bars, small shapes and iron bars (except bands).....	3.00c.
Round-edge iron .....	3.50c.
Round-edge steel, iron finished, $1\frac{1}{2} \times 1\frac{1}{2}$ in. ....	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	3.00c.
Cold-finished steel, rounds and hexagons .....	4.00c.
Cold-finished steel, squares and flats .....	4.50c.
Steel hoops .....	4.00c. to 4.25c.
Steel bands, No. 12 gage to $\frac{1}{4}$ -in., inclusive .....	3.75c. to 3.90c.
Spring steel .....	5.00c.
No. 28 black sheets.....	4.55c.
No. 10 blue annealed sheets.....	3.50c.
No. 28 galvanized sheets.....	5.75c.
Diamond pattern floor plates— $\frac{1}{4}$ -in. ....	5.30c.
$\frac{3}{8}$ -in. ....	5.50c.
Rails .....	3.20c.
Tool steel .....	8.50c.
Swedish iron bars.....	6.00c. to 6.50c.



**Ferroalloys.**—No business at all is reported in ferromanganese and shipments of the British alloy on contract have practically stopped. At the best these would have been small as sales from this source have been at the minimum in recent months. New business in spiegeleisen is confined to carload and small lots, but specifications on contract are exceedingly satisfactory. The minimum quotation of ferromanganese continues at \$88, seaboard, with domestic alloy quoted at \$95, furnace, and the British at \$110, seaboard. Spiegeleisen quotations are unchanged.

**Cast Iron Pipe.**—Although the market is still only moderately active, the number of sizable inquiries in prospect is increasing. Specifications are reported being prepared by Springfield, Mass., Peekskill, N. Y., and Hagerstown, Md. The pipe for St. Petersburg, Fla., and Union Beach, N. J., has not yet been awarded. Several small lots of 4-in. and 6-in. pipe are reported pending with private purchasers. Prices are unchanged.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$50.60 to \$52.60; 4-in. and 5-in., \$55.60 to \$57.60; 3-in., \$65.60 to \$67.60; with \$5 additional for Class A and gas pipe.

**Warehouse Business.**—Purchasing from stock is in better volume than for some time. Settlement of local strikes in the building trades has brought some prompt shipment structural steel business to jobbers and prices are firmer than for several weeks. Concession from the established schedule, however, are reported to be still obtainable, either on unusually desirable tonnages or when foreign material is offered. Black and galvanized sheets continue unchanged in price and the market is quiet.

#### Warehouse Prices, f.o.b. New York

	Base per Lb.	
Plates and structural shapes.....	3.24c. to 3.34c.	
Soft steel bars and small shapes.....	3.14c. to 3.24c.	
Iron bars.....	3.24c.	
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.	
Cold-finished steel shafting and screw stock—		
Rounds and hexagons.....	4.00c.	
Flats and squares.....	4.50c.	
Cold-rolled strip, soft and quarter hard...	6.25c.	
Hoops.....	4.49c.	
Bands.....	3.99c.	
Black sheets (No. 28 gage).....	4.50c.	
Blue annealed sheets (No. 10 gage).....	3.89c.	
Galvanized sheets (No. 28 gage).....	5.65c.	
Long terne sheets (No. 28 gage).....	6.35c.	
Standard tool steel.....	12.00c.	
Wire, black annealed.....	4.50c.	
Wire, galvanized annealed.....	5.15c.	
Tire steel, 1½ x ½ in. and larger.....	3.30c.	
Smooth finish, 1 to 2½ x ¼ in. and larger.....	3.65c.	
Open-hearth spring steel, bases.....	4.50c. to 7.00c.	
Per Cent Off List		
Machine bolts, cut thread.....	40 and 10	
Carriage bolts, cut thread.....	30 and 10	
Coach screws.....	40 and 10	
Boiler Tubes—	Per 100 Ft.	
Lap welded steel, 2-in.....	\$17.33	
Seamless steel, 2-in.....	20.24	
Charcoal iron, 2-in.....	25.00	
Charcoal iron, 4-in.....	67.00	

#### Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-in. butt.....	52	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	4	+19
¾-in. butt.....	11	+9
1-1½-in. butt.....	14	+6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+6
7-12-in. lap.....	3	+16

#### Tin Plate (14 x 20 in.)

	Primes	Seconds
Coke, 100-lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00

#### Terne Plate (14 x 20 in.)

IC—20-lb. coating.....	\$10.00 to \$11.00
IC—30-lb. coating.....	12.00 to 13.00
IC—40-lb. coating.....	13.75 to 14.25

**Coke.**—Buying is light but continued reduction of the number of ovens in operation is apparently serving to maintain prices. Standard foundry is unchanged at \$8.41 to \$9.41 per net ton, delivered Newark and Jersey City, N. J., \$8.53 to \$9.53, delivered northern New Jersey and \$9.29 to 10.29, delivered New York or Brooklyn, N. Y. By-product is \$9.75 to \$10.77 per ton, delivered Newark or Jersey City, N. J.

**Finished Steel.**—The British labor strike is beginning to enter into the calculations of the steel trade here, chiefly on the theory that regardless of the duration of the strike the dislocation of industry in Great Britain will be such that its foreign customers will protect themselves by ordering steel in this or other countries. Tangible evidence of this came to hand during the week in inquiries from British possessions for tin plate totaling a few thousand tons. So far no business has resulted. In general, export inquiry during the week was larger than in preceding weeks, and such inquiry is expected to grow in volume if the British strike is long drawn out. In domestic trade there have been no marked developments except weakness in sheet prices and in cold rolled strip steel. Black sheets have dropped to 3.15c., Pittsburgh, on some of the more attractive business, with 3.20c. a fairly common quotation, and 3.25c. obtainable on the smaller orders. On galvanized sheets there has been no further decline, but the ruling quotation is 4.40c., Pittsburgh. On blue annealed sheets the usual quotation is 2.40c., Pittsburgh, but this has been shaded to 2.35c. in a few instances. Efforts of some of the manufacturers of cold rolled strip steel to hold the price at 3.75c., Pittsburgh, have not been wholly successful, there having been within the week some lower quotations. Plates at 1.90c., Pittsburgh, and bars at 2c., Pittsburgh, remain fairly firm, while occasional concessions amounting usually to \$1 or \$2 a ton appear among quotations on structural shapes, although the bulk of the tonnage is probably at 1.90c. Wire nails remain at \$2.65 per keg, but business is dull.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.19c. to 2.24c.; bar iron, 2.24c.

**Old Material.**—The downward trend of prices continues with all grades of scrap affected. Brokers are apparently securing a sufficient supply of material at present offering prices but their demands are not large as consumers are buying in no better volume. No. 1 heavy melting steel is being purchased at \$15 per ton and slightly less up to \$15.50 per ton and occasionally \$15.75 per ton on old orders. Stove plate for steel mill use is being purchased at \$13.50 per ton, delivered eastern Pennsylvania while for local foundry consumers only about \$12.75 per ton, delivered is offered. Chemical borings have been purchased at \$15 per ton, delivered to a local consumer taking a low freight rate. Specification pipe is not quotable at better than \$15 per ton, delivered eastern Pennsylvania. Machine shop turnings, bundled skeleton and borings and turnings are unchanged.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.75 to \$10.25
Heavy melting steel (railroad or equivalent).....	11.50 to 12.25
Rails for rolling.....	12.00 to 12.50
Relaying rails, nominal.....	23.00 to 24.00
Steel car axles.....	19.00 to 19.50
Iron car axles.....	21.50 to 22.00
No. 1 railroad wrought.....	13.50 to 14.00
Forge fire.....	10.00 to 10.50
No. 1 yard wrought, long.....	12.50 to 13.00
Cast borings (steel mill).....	9.25 to 10.00
Cast borings (chemical).....	12.50 to 13.00
Machine shop turnings.....	9.00 to 9.75
Mixed borings and turnings.....	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	11.25
Stove plate (steel mill).....	9.75 to 10.25
Stove plate (foundry).....	10.25 to 10.75
Locomotive grate bars.....	10.25 to 10.75
Malleable cast (railroad).....	16.00 to 16.50
Cast iron car wheels.....	13.00 to 13.50
No. 1 heavy breakable cast.....	12.00 to 12.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.50 to \$17.00
No. 1 heavy cast (column, building material, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc.).....	14.00 to 14.50

## San Francisco

### Strike Brings Out Coke Inquiries—Cars Call for 3500 Tons of Steel

SAN FRANCISCO, May 8 (By Air Mail).—Local importers have received a number of fresh inquiries for English coke, as well as a few for English foundry iron, as a result of the British general strike. Stocks on hand are said to be adequate for all current requirements, and two importers have fresh shipments en route, one of which is expected to arrive next week. Prices are unchanged, but it is considered likely that higher quotations will be made on all inquiries for forward needs. English beehive coke is quoted at \$15 to \$16 per ton at incoming dock, and English by-product ranges from \$12 to \$14.

Business in nearly all departments of the market has been confined to routine developments, and only one large inquiry for heavy steel has come up for figures during the week—3500 tons of shapes and plates for the Southern Pacific Equipment Co., San Francisco.

In connection with the local union carpenters' strike, now in its sixth week, a committee of the San Francisco Board of Supervisors will hold separate meetings during the coming week with representatives of the General Contractors' Association and officers of the local union in order to develop some basis for compromise so that further interruption of construction work may be prevented.

**Pig Iron.**—A few small inquiries for English foundry iron have developed during the week, but buying interest, for the most part, is lacking. Quotations are unchanged.

	Per Gross Ton
*Utah basic .....	\$26.00 to \$27.00
*Utah foundry, sil. 2.75 to 3.25...	26.00 to 27.00
**English foundry, sil. 2.75 to 3.25...	25.00
**Indian foundry, sil. 2.75 to 3.25...	24.50
**German foundry, sil. 2.75 to 3.25...	23.00 to 23.50
**Dutch foundry, sil. 2.75 to 3.25...	22.50
**Belgian foundry, sil. 2.75 to 3.25...	22.00

**Shapes.**—Lettings total 745 tons; fresh inquiries call for 4409 tons. The Southern Pacific Equipment Co., San Francisco, has put out the largest inquiry that has come into the market in several weeks—3500 tons of shapes and plates, which will be used for car construction. The Standard Oil Co. is inquiring for about 150 tons of special billets. The largest individual award of the week, 565 tons, for the Peery office building, San Diego, Cal., was taken by the Moore Dry Dock Co., Oakland, Cal. Judson Mfg. Co., Oakland, is low bidder on 350 tons for the Frick School, Oakland. Eastern mills continue to quote plain material at 2.30c. to 2.35c., c.i.f. Coast ports.

**Plates.**—The Imperial Oil Co. of Canada, which recently put out an inquiry through the Standard Oil Co., San Francisco, for 1400 tons for an oil barge, has withdrawn its inquiry, since the Standard Oil Co. will sell one of its own barges to its Canadian subsidiary. Bids have been closed on the 200 tons required for a pipe line by the Nevada County Irrigation District, Grass Valley, Cal., but indications are that wood pipe will be given preference, as the low bid was submitted on wood. Nothing has been done as yet toward closing contracts on the 3700 tons for twelve 80,000-bbl. tanks called for by the Union Oil Co., Los Angeles, in the amended inquiry it put out after originally calling for 23,000 tons. However, it is understood that the original tonnage will be placed in moderate-size lots over a period of time.

#### Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes.....	3.30c.
Mild steel bars and small angles.....	3.30c.
Small channels and tees, 3/4-in. to 2 3/4-in..	3.90c.
Spring steel, 1/4-in. and thicker.....	6.30c.
No. 28 black sheets.....	4.75c.
No. 10 blue annealed sheets.....	3.75c.
No. 28 galvanized sheets.....	6.00c.
Common wire nails, base per keg.....	\$3.50
Cement coated nails, base per keg.....	3.00

**Bars.**—Three concrete bar lettings of 100 tons each have been placed in the Pacific Northwest, but no awards of importance are known to have been made in the local market during the week. Several new projects have come up for figures, but most of them individually call for less than 100 tons of steel. Local reinforcing bar jobbers quote as follows: 2.80c., base, per lb. on lots of 250 tons; 2.95c., base, per lb. on carload lots, and 3.20c., base, on less-than-carload lots.

**Cast Iron Pipe.**—The city of Pasadena, Cal., has awarded 1514 tons as follows: 656 tons of 6-in. and 8-in. "mono-cast" iron pipe to the American Cast Iron Pipe Co.; 608 tons of 4, 6 and 12-in. Classes B and C standard sand cast iron pipe to the National Cast Iron Pipe Co., and 250 tons of 16-in. Class B standard sand cast iron pipe to the United States Cast Iron Pipe & Foundry Co. B. Nicoll & Co., representing French pipe interests, are low bidders on 190 tons of 8-in. Class B called for by the city of Santa Ana, Cal. A referendum held in the city of Palo Alto, Cal., April 29, resulted in \$200,000 worth of bonds being voted for water system improvements, the specifications of which call for 1043 tons of 4-in. to 14-in. Class B cast iron pipe. The city of Chandler, Ariz., will close bids May 27 on about 640 tons, and the city of Glendale, Cal., has already taken bids on 1350 tons. Quotations are unchanged at \$50 to \$52 base, water shipment, San Francisco.

**Rails and Track Supplies.**—The city of Seattle, Wash., has closed bids on 550 tons of rails. The Santa Fe railroad, Kerckhoff Building, Los Angeles, has purchased the Fresno Interurban Railroad, Fresno, Cal., and plans to build a bridge over King's River near Centerville, and also about three miles of railroad, at an estimated cost of \$150,000.

**Tin Plate.**—A local exporter has bought 500 base boxes for shipment to southern China, and several other small inquiries are in the market for export.

**Warehouse Business.**—Inquiry has fallen off slightly. Wire products are less active, and general routine orders are also smaller. Quotations are unchanged.

**Coke.**—Two local importers have shipments of English coke en route. Stocks on hand in importers' yards are fairly large. Some German coke is also expected to arrive shortly. Several good-size inquiries came into the market during the week. Quotations are unchanged, but it is considered only a question of time before the price of English coke will be advanced. Importers quote as follows:

English beehive, \$15 to \$16 per ton at incoming dock, and English by-product, \$12 to \$14; German by-product, \$11.50 to \$12.

**Imports.**—A shipment of about 500 tons of Belgian soft steel bars has been received by a local firm. No other steel imports of over 100 tons are known to have been unloaded.

## Birmingham

### Finished Steel Firmer—Pig Iron Quiet, but Two Furnaces Will Go In

BIRMINGHAM, May 11.—Pig iron production is being maintained, and deliveries are in good volume, further reducing surplus stocks on furnace yards. Shipments, moreover, are confined almost entirely to the South. On the other hand, there is little new buying and such orders as are being placed call for small tonnages. Producers continue to hold the market at \$22, Birmingham, for No. 2 foundry iron, although buyers rather generally look for a reduction in price. A number of inquiries have been put out for third quarter, but they have failed to bring out concessions. Output will soon be increased by the resumption of operations by two furnaces, the stack of the Central Iron & Coal Co., Holt, Ala., and one of the Woodward Iron Co. furnaces.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil...	\$22.00
No. 1 foundry, 2.25 to 2.75 sil...	22.50
Basic .....	22.00
Charcoal, warm blast.....	\$30.00 to 32.00



**Rolled Steel.**—Plates and structural shapes appear to have recovered from recent weakness and are again quoted at 2.05c. to 2.15c., base Birmingham. Soft steel bars remain at 2.15c. to 2.25c., base Birmingham. Steel producers still have good backlogs, and open-hearth furnace output is well maintained. The Gulf States Steel Co., Alabama City, Ala., is running its new bar mill on double turn. Specifications from the railroads are in good volume. Fabricating shops are busy, and most other classes of steel consumers are operating at a good rate.

**Cast Iron Pipe.**—Production of pressure pipe shows little, if any, recession, and shipments are heavy. Inquiry, however, is less active. Prices are unchanged at \$40, Birmingham, for 6-in. and larger pipe, with \$4 extra added for 4-in. pipe. Demand for soil pipe and fittings has improved, and producers hope to increase operations to five days a week.

**Coke.**—Coke output is holding up, and independent producers are shipping all that they make. Iron and steel plants with coke ovens always carry some stock; hence their surplus is not causing any comment. Prices on foundry coke range from \$5 to \$5.50, Birmingham. Coal production in Alabama has been around 400,000 tons weekly for several months. The destruction of a tippie at the Holly Grove mines of the Galloway Coal Co. will have little effect on production, since other mines can easily make up the deficiency.

**Old Material.**—Open-hearth furnaces are not buying heavy melting steel for the time being, and it is believed that their present contracts will carry them through the next 30 days. Dealers continue to ship against old orders, but are keeping their stocks in good order so that they can take care of any possible improvement in demand. Prices have remained unchanged for several weeks.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	13.00 to 14.00
Railroad wrought.....	12.00 to 13.00
Steel axles.....	18.00 to 19.00
Iron axles.....	18.00 to 19.00
Steel rails.....	18.00 to 18.50
No. 1 cast.....	17.00 to 17.50
Tramcar wheels.....	17.00 to 17.50
Car wheels.....	16.00 to 16.50
Stove plate.....	14.00 to 14.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings.....	8.00 to 9.00
Rails for rolling.....	15.00 to 16.00

## St. Louis

### Sheets and Plates Weak—Lower Quotations on Southern Pig Iron

ST. LOUIS, May 11.—Sales of pig iron during the last week totaled less than 1000 tons, of which 750 tons was booked by the Granite City furnace. Inquiries are few, calling for between 500 and 1000 tons in lots of 50 to 200 tons for delivery over the next 90 days. Not much buying is expected during second quarter. Most melters are fairly well supplied, and those who are not are

buying when and as they need the iron. Stove plants in the district are running only two or three days a week, and the melt among jobbing foundries also has fallen off considerably. The market is weak. Chicago furnace prices are nominally unchanged, but it is believed that sales in this market would be made on a lower basis than quoted. Southern iron is quoted lower, ranging from \$20.50 to \$22, base Birmingham.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$23.16 to \$24.16
Northern malleable, sil. 1.75 to 2.25...	23.16 to 24.16
Basic.....	23.16 to 24.16
Southern fdy., sil. 1.75 to 2.25...	25.42 to 27.42
Granite City iron, sil. 1.75 to 2.25...	23.31 to 23.81

**Finished Iron and Steel.**—Sheets and tank plates are weak, and while prices are nominally unchanged, it is understood that purchases can be made as much as 10c. off per 100 lb., and in some cases 15c. off. Business is dull, and mills are eager to move material. Warehouse business is only fair. The volume in April was not quite so large as in March. Fabricators report that business is quiet.

The Springfield, Havana & Peoria Railroad, under which name the reorganized Chicago, Peoria & St. Louis Railroad is to be known, has purchased 6000 tons of 90-lb. rails from the Inland Steel Co. for delivery within the next three or four months. Action on the Wabash Railway inquiry for 1640 tons of 110-lb. rails, with accessories, has been delayed indefinitely.

**Coke.**—A fairly good demand for foundry coke for immediate consumption is reported, and a few contracts are being closed, the largest being 1000 tons placed with the Granite City ovens for shipment over the next 12 months. Domestic coke demand has eased up considerably because of the warm weather.

**Old Material.**—The market is weak, although prices are unchanged. Only a few small sales were reported. Consumers in the district are buying more from hand to mouth than ever, and purchases are made with the understanding that shipments are to be immediate. Dealers' stocks are low, and they are buying only sufficient material to fill contracts. Country dealers complain that they cannot operate at present prices. Railroads continue to offer material, but sales are made at lower levels. New railroad lists include: St. Louis & Hannibal, 7000 tons; Chicago & Alton, 2800 tons; Great Northern, 3600 tons; Missouri-Kansas-Texas, 2100 tons; Texas & Pacific, 700 tons; Kansas City Southern, 300 tons, and Pullman Co., 350 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails.....	\$12.00 to \$12.50
Rails for rolling.....	15.00 to 15.50
Steel rails less than 3 ft.....	16.50 to 17.00
Relaying rails, 60 lb. and under.....	24.00 to 25.00
Relaying rails, 70 lb. and over.....	30.00 to 31.00
Cast iron car wheels.....	15.50 to 16.00
Heavy melting steel.....	12.25 to 12.75
Heavy shoveling steel.....	12.25 to 12.75
Frogs, switches and guards cut apart.....	13.75 to 14.25
Railroad springs.....	16.50 to 17.00
Heavy axle and tire turnings.....	8.50 to 9.00
No. 1 locomotive tires.....	16.50 to 17.00

Per Net Ton	
Steel angle bars.....	12.50 to 13.00
Steel car axles.....	17.50 to 18.00
Iron car axles.....	21.50 to 22.00
Wrought iron bars and transoms.....	18.00 to 18.50
No. 1 railroad wrought.....	11.00 to 11.25
No. 2 railroad wrought.....	10.00 to 10.50
Cast iron borings.....	11.00 to 11.50
No. 1 busheling.....	14.00 to 14.50
No. 1 railroad cast.....	16.50 to 17.00
No. 1 machinery cast.....	13.50 to 14.00
Railroad malleable.....	6.25 to 6.75
Machine shop turnings.....	7.00 to 7.50
Bundled sheets.....	

Cooperative group life, health and non-occupational accident insurance and the advantages of a trained nursing service have been provided for employees of the Stupp Brothers Bridge & Iron Co., St. Louis, Mo. Each employee, besides a \$1,000 life insurance, has protection under which he will receive, when sick or injured off the job, a weekly benefit of \$10 for a maximum of 13 consecutive weeks.

### Warehouse Prices, f.o.b. St. Louis

Base per Lb.	
Plates and structural shapes.....	3.25c.
Bars, mild steel or iron.....	3.15c.
Cold-finished rounds, shafting and screw stock.....	3.75c.
No. 28 black sheets.....	4.60c.
No. 10 blue annealed sheets.....	3.60c.
No. 28 galvanized sheets.....	5.70c.
Black corrugated sheets.....	4.65c.
Galvanized corrugated sheets.....	5.75c.
Structural rivets.....	3.65c.
Boiler rivets.....	3.85c.
Per Cent Off List	
Tank rivets, 7/8-in. and smaller.....	70
Machine bolts.....	50 and 5
Carriage bolts.....	47 1/2
Lag screws.....	55 and 5
Hot-pressed nuts, square, blank or tapped, 3.25c. off per lb.	
Hot-pressed nuts, hexagons, blank or tapped, 3.75c. off per lb.	

## Boston

### Pig Iron Demand Still Lags— Sheet Prices Easier

BOSTON, May 11.—The pig iron market is inactive, and prices continue to hold practically without change. There are practically no inquiries, the only one of any moment being from a western Massachusetts interest for 500 to 600 tons. Some foreign iron has been sold here during the week, and for Indian No. 1 foundry, \$23, duty paid, Boston, is being asked, though German pig iron is being offered at considerably below that figure.

We quote delivered prices on the basis of the latest sales as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	\$25.65 to \$26.15
East. Penn., sil. 2.25 to 2.75	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25	25.41 to 25.91
Buffalo, sil. 2.25 to 2.75	25.91 to 26.41
Virginia, sil. 1.75 to 2.25	29.92
Virginia, sil. 2.25 to 2.75	30.42
Alabama, sil. 1.75 to 2.25	28.91 to 31.61
Alabama, sil. 2.25 to 2.75	29.41 to 32.11

**Cast Iron Pipe.**—Private demand for pipe remains fairly good, though there is no activity in municipal business. The only letting of the past week was approximately 300 tons of 4-in. to 12-in. pipe, bids on which were opened May 7, at Woonsocket, R. I. Bids will be opened May 12 by Taunton, Mass., on approximately 100 tons of 4-in. to 12-in. pipe. Prices continue to hold firm.

**Finished Steel.**—No large orders are in the offing; yet a considerable amount of business is developing in small propositions. Shipments from mills generally have been lighter, but prices, as a rule, are steady. The market for plates and sheets remains quiet. Sheets have shown slight weakness. Little other than hand-to-mouth buying is going on. Among consumers, builders of textile machinery are experiencing a very quiet period, resulting from the unfavorable condition of the textile industry. In fabricated steel the Boston Bridge Co. closed up some fairly good contracts in the past week. Among the propositions in hand and upon which bids have been made there is one for 150 tons for the Mack Truck Co. plant at Allston, Mass., a new high school building at Concord, N. H., which calls for 180 tons, and a cathedral at the Holy Cross School, Boston, 150 tons.

**Warehouse Business.**—There has been but little change in the movement of iron and steel from the warehouses. It was thought the more favorable weather might prove a stimulating influence, but this has not been the case.

**Coke.**—Business in foundry coke remains in satisfactory volume, while shipments compare favorably with those of last month. It is not now expected that the New England producers will take any action on contracts for the last half of the year until late this month or early in June.

#### Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flats, hot rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Wayne	5.50c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hexagons	3.95c.
Squares and flats	4.45c.
Toe calk steel	6.00c.

**Old Material.**—Shippers continue to exercise the policy of holding for prices and, as a result, there is very little scrap moving. Despite this effort some grades are easier, but even at the lower figures there has been no buying of any consequence.

The following prices are for gross-ton lots delivered consuming points:

Textile cast	\$18.50 to \$19.00
No. 1 machinery cast	17.50 to 18.00
No. 2 machinery cast	14.50 to 15.00
Stove plate	13.50 to 14.00
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$10.10 to \$10.60
No. 1 railroad wrought	12.00 to 12.50
No. 1 yard wrought	13.00 to 13.50
Wrought pipe (1 in. in diameter, over 2 ft. long)	10.75 to 11.25
Machine shop turnings	8.50 to 9.00
Cast iron borings, chemical	10.50 to 11.00
Cast iron borings, rolling mill	8.50 to 9.00
Blast furnace borings and turnings	8.10 to 8.35
Forged scrap	9.00 to 9.50
Bundled skeleton, long	8.00 to 8.50
Forged flashings	9.00 to 9.50
Bundled cotton ties, long	8.50 to 8.75
Bundled cotton ties, short	9.00 to 9.50
Shafting	16.00 to 16.50
Street car axles	15.50 to 16.00
Rails for rerolling	11.50 to 12.00
Scrap rails	10.50 to 11.00

## Cincinnati

### Tennessee Pig Iron Down 50c. to \$1 a Ton—Black Sheets Sold at 3.15c.

CINCINNATI, May 11.—With pig iron buyers following a waiting policy, and with southern Ohio furnaces reluctant to take business at under \$20, base Ironton, the market has been sluggish. With a few exceptions sales have been confined to small lots, ranging from single carloads up to 150 tons. There has been no real test of the price of foundry iron from the Ironton district, but it is believed that the appearance of a sizable tonnage would result in at least one seller dipping below the present level. Tennessee iron has declined from 50c. to \$1 a ton, and now can be purchased at \$20.50, base Birmingham. A Cleveland melter has bought 500 tons of Tennessee foundry iron. Jackson County silvery furnaces are adhering rigidly to their present schedules. On an inquiry from the Wagner Mfg. Co., Sidney, Ohio, for 300 tons of 6 per cent they quoted \$25.50, furnace, for second and third quarter deliveries, adding \$1 for fourth quarter shipments. Little interest is manifested in Alabama iron, which remains steady at \$22, base Birmingham. Malleable iron is being quoted at \$19.50, base furnace. The Advance Foundry Co., Dayton, Ohio, has purchased 500 tons of malleable. The Hooven-Owens-Rentschler Co., Hamilton, Ohio, has contracted for 500 tons of foundry iron, and the Wilmington Castings Co., Wilmington, Ohio, is in the market for a like tonnage. An up-State melter is inquiring for 800 tons of foundry iron. A local dealer has sold several cars of spiegel-eisen.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	
(base)	\$25.69
Alabama fdy., sil. 2.25 to 2.75	26.19
Tennessee fdy., sil. 1.75 to 2.25	\$24.19 to 24.69
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25	21.89
So. Ohio malleable	21.39 to 21.89

**Finished Material.**—Business in the first week of May paralleled that in the last week of April. A substantial portion of the orders now being booked are for the jobbing trade, which has permitted its warehouse stocks to reach a low point. Consuming industries, especially those serving the automobile manufacturers, have reduced their operating schedules temporarily and of necessity have cut down on their specifications and orders for steel. In general, buyers are alert to the fact that mills are eager for tonnage and are placing their business with those producers who offer the lowest price and the best delivery. Consequently, there has been a scramble among sellers to



obtain whatever tonnage is available. District sales offices, which a few weeks ago were content to allow competitors to make sales at concessions of \$2 a ton, now are meeting whatever prices are encountered. This is especially true on black, galvanized and automobile body sheets. Black sheets are bringing 3.15c. to 3.25c., base Pittsburgh, but demand is lagging. Weakness in galvanized sheets has brought out a quotation of 4.40c., base Pittsburgh. Sales of blue annealed have been made at 2.40c., base Pittsburgh. It is reported, but not confirmed, that automobile body sheets have been offered at as low as 4.25c., base Pittsburgh, a reduction of \$3 a ton from what has been the regular schedule. The bar market shows signs of reviving, with 2c., base Pittsburgh, the current price. A consumer in this territory is inquiring for 3000 tons of angle bars. Structural shapes are in fair demand at 1.90c., base Pittsburgh, and plates are firm at that quotation. The Louisville & Nashville is expected to purchase 175 tons of plates. There has been further improvement in the sale of wire goods. Common wire nails are steady at \$2.65 per keg, base Ironton, and plain wire at \$2.50 per 100 lb., base Ironton.

**Reinforcing Bars.**—After a long period of dullness, construction work is beginning to open up in this territory. Frank Hill Smith, Dayton, Ohio, has been awarded a general contract by the Home Store Co. of that city for a building which will take approximately 400 tons of bars. There are three local projects which will require 100 tons each. In addition there are a number of jobs taking from 25 to 50 tons, which will probably be let in the next two weeks. New billet bars are steady at 2c., Cleveland, and rail steel bars at 1.90c., mill.

**Warehouse Business.**—Despite the fact that almost perfect weather has prevailed during the past week, the volume of sales has remained considerably below normal. However, several jobbers report an increased demand for tank plates and structural steel. Quotations are firm.

**Coke.**—The movement of by-product foundry coke in the first 10 days of May was about 15 per cent less than that in the corresponding period in April. The sale of 9000 to 12,000 tons of Wise County foundry coke to a Wisconsin consumer for delivery up to Dec. 1 was the outstanding feature of the local market. New River foundry coke is moderately active at \$7 to \$7.50, ovens. Prices on both by-product and beehive grades have not changed in the past week.

Based on freight rates of \$2.14 from Ashland, Ky., \$3.53 from Connellsville, and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Connellsville foundry, \$7.53 to \$9.53; Wise County foundry, \$6.84 to \$7.59; New River foundry, \$9.59 to \$10.09; by-product foundry, \$10.14.

**Old Material.**—While mills are not holding up shipments they are taking only a fair amount of material. Most steel plants in this territory have accumulated a substantial supply of scrap, and their operations are not sufficiently heavy to warrant acceptance of fresh tonnage except in limited quantities. It is understood that dealers paid good prices for the items offered last week by the Big Four. Lists closing this week include

the Southern, 7000 tons; Louisville & Nashville, 9000 tons, of which 4770 tons is No. 1 scrap steel rails; Norfolk & Western, 9500 tons, of which 3500 tons consists of No. 2 melting steel rails; and Chesapeake & Ohio, 9000 tons, of which 2500 tons is No. 3 steel rails and 1000 tons is No. 1 steel rails.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$11.50 to \$12.00
Scrap rails for melting.....	12.00 to 12.50
Short rails.....	16.50 to 17.00
Relaying rails.....	27.00 to 27.50
Rails for rolling.....	13.00 to 13.50
Old car wheels.....	12.50 to 13.00
No. 1 locomotive tires.....	16.50 to 17.00
Railroad malleable.....	15.50 to 16.00
Agricultural malleable.....	14.00 to 14.50
Loose sheet clippings.....	7.00 to 7.50
Champion bundled sheets.....	9.00 to 9.50
Per Net Ton	
Cast iron borings.....	6.50 to 7.00
Machine shop turnings.....	6.00 to 6.50
No. 1 machinery cast.....	17.00 to 18.00
No. 1 railroad cast.....	13.50 to 14.00
Iron axles.....	20.00 to 20.50
No. 1 railroad wrought.....	9.00 to 9.50
Pipes and flues.....	7.50 to 8.00
No. 1 busheling.....	9.00 to 9.50
Mixed busheling.....	7.00 to 7.50
Burnt cast.....	7.00 to 7.50
Stove plate.....	9.00 to 9.50
Brake shoes.....	9.50 to 10.00

Buffalo

Scrap Active—Improved Demand for Concrete Bars—Pig Iron Dull

BUFFALO, May 11.—No large inquiries for pig iron are coming out, and melters who need iron are buying in carload or 100-ton lots. So far the furnaces have maintained prices at \$21 base, Buffalo, and the usual differentials for higher silicons. The English strike is regarded as a strengthening factor for this market, inasmuch as some Eastern melters who have been buying British iron may not be able to obtain deliveries. Pending inquiries total 4000 or 5000 tons but, generally speaking, melters are not ready to contract for third quarter. Local furnaces find the Troy stack an active competitive factor in Eastern business. It is understood that the Troy furnace is making a price which approximates \$21, Buffalo.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdry., sil. 1.75 to 2.25.....	\$21.00
No. 2X foundry, sil. 2.25 to 2.75.....	21.50
No. 1X foundry, sil. 2.75 to 3.25.....	22.50
Malleable, sil. up to 2.25.....	21.00
Basic.....	20.00
Lake Superior charcoal.....	29.25

**Finished Iron and Steel.**—The market continues firm, with demand not quite so good. Bars, shapes and plates are moving in about the same volume as heretofore, and business in sheets shows a little improvement. Reinforcing bar tonnage is more plentiful. The F. N. Burt Co. factory, Buffalo, 440 tons, is due to be placed some time this week. Warehouses for the Republic Metalware Co., Buffalo, and the Knowlton Warehouse Co., Buffalo, requiring 150 tons in all, were placed during the week. The Stromberg-Carlson Telephone Mfg. Co., Rochester, will build an addition to its factory, calling for 230 tons, and the Richardson Corporation, Rochester, is building a 150-ton addition. Nuts and bolts are in good demand and prices are firm. Wire business is heavy.

**Old Material.**—The market has been very active during the past week. A mill which requires a selected grade of heavy melting steel and which bought a sizable tonnage the week previous, resumed its purchases, paying \$16 to \$16.25. Another mill using a different kind of steel is offering \$14.50 to \$15. Dealers are stirring up the market in their quest of steel to fill these orders, and it is now the general opinion that the bottom in prices has been reached. The recent railroad lists did not come to Buffalo, and in some cases dealers are paying as much for heavy melting steel as they

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes.....	3.40c.
Bars, mild steel or iron.....	3.30c.
Reinforcing bars.....	3.30c.
Hoops.....	4.00c. to 4.25c.
Bands.....	3.95c.
Cold-finished rounds and hexagons.....	3.85c.
Squares.....	4.35c.
Open-hearth spring steel.....	4.75c. to 5c.
No. 28 black sheets.....	4.10c. to 4.30c.
No. 10 blue annealed sheets.....	3.60c.
No. 28 galvanized sheets.....	5.25c. to 5.40c.
Structural rivets.....	3.75c.
Small rivets.....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg.....	3.15
Chain, per 100 lb.....	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	39.00

## Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Mild steel bars.....	3.30c.
Cold-finished shapes.....	4.45c.
Rounds.....	3.95c.
No. 28 black sheets.....	4.60c.
No. 10 blue annealed sheets.....	3.90c.
No. 28 galvanized sheets.....	5.75c.
Common wire nails, base per keg.....	\$3.90
Black wire, base per 100 lb.....	3.90

will receive for it. There has been some buying of blast furnace scrap at \$12.50 to \$12.75. Malleable has been quiet, with old orders sustaining the market. Stove plate has been more active, with \$14 to \$14.50 being paid.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel.....	\$14.50 to \$15.00
Selected No. 1 heavy melting steel.....	16.00 to 16.25
Low phosphorus.....	17.50 to 18.00
No. 1 railroad wrought.....	14.00 to 14.50
Car wheels.....	17.00 to 17.50
Machine shop turnings.....	9.50 to 10.00
Mixed borings and turnings.....	12.00 to 12.50
Cast iron borings.....	12.00 to 12.50
No. 1 busheling.....	14.00 to 14.50
Stove plate.....	14.00 to 14.50
Grate bars.....	13.00 to 13.50
Hand-bundled sheets.....	10.00 to 10.50
Hydraulic compressed.....	14.50 to 15.00
No. 1 machinery cast.....	17.00 to 17.50
Railroad malleable.....	21.00 to 22.00
Iron axles.....	24.00 to 25.00
Steel axles.....	16.00 to 16.50

## Quiet Scrap Market at Detroit

DETROIT, May 11.—The market on old material has been very quiet during the past week, with no change in prices. The general feeling seems to be that the market is practically on the bottom. One or two mills have been negotiating quietly for future shipment, but confirmation is lacking that these sales have been made.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel.....	\$13.25 to \$13.75
Borings and short turnings.....	8.75 to 9.25
Long turnings.....	7.50 to 8.00
No. 1 machinery cast.....	17.00 to 18.00
Automobile cast.....	21.50 to 22.50
Hydraulic compressed.....	10.50 to 11.00
Stove plate.....	13.50 to 14.50
No. 1 busheling.....	11.25 to 11.75
Sheet clippings.....	7.00 to 7.50
Flashings.....	10.00 to 10.50

## Concessions Being Made in Prices of Refractories

The refractories market is quieter than it has been, particularly so far as blast furnace and steel plant requirements are concerned. Sales effort is growing stronger on account of the lighter demands and while there is no change in the regular market prices, concessions are more frequent than they were recently. Illinois producers of fire clay brick have found it impossible to obtain the prices they have been quoting in competition with Missouri brick and have lowered them to the Missouri prices. Most of the business in chrome brick is at \$45 per net ton. Prices are given on page 1375.

## Set Date for Hearing on Pig Iron Rates in C. F. A. Territory

WASHINGTON, May 11.—The Interstate Commerce Commission today announced that a hearing on the proposal of railroads to increase rates on pig iron in Central Freight Association territory has been set for June 14, at Indianapolis, before Examiner W. H. Smith. These tariffs recently were suspended pending a hearing on the proposed restoration of old rates from furnaces throughout Ohio, which prevailed before lower rates were put into effect upon the initiative of the New York Central and Wheeling & Lake Erie railroads.

## Upholds Delivery Charges on Ex-Lake Ore Beyond Plant Interchange Tracks

WASHINGTON, May 11.—Delivery charges by railroads on ex-Lake iron ore beyond interchange tracks at the plant of the Carnegie Steel Co. in Youngstown, Ohio, are not unreasonable, according to a tentative report made by Examiner J. Edgar Smith of the Interstate Commerce Commission. The report, made public yesterday, held that such charges in excess of line-haul charges, where there is no interchange track and when no excessive service is furnished, are unreasonable and subject the Carnegie company to undue prejudice and disadvantage. The case has been pending for 6 years. Recommendation is that overcharges be refunded.

## New Rate on Steel from Duluth to Minneapolis Restored

WASHINGTON, May 11.—The Interstate Commerce Commission has vacated a recent suspension order so far as it relates to two rates on iron and steel products put into effect by the Elgin, Joliet & Eastern and the Minneapolis, St. Paul & Sault Ste. Marie railroads. The commission had included these particular rates in its order suspending all the tariffs filed by railroads in Illinois Freight Association territory, in accordance with the Jones & Laughlin mileage scale. Subsequently it was found that the two rates were not made in compliance with that scale and the one made by the Soo line, providing a rate of 15.5c. per 100 lb. between Duluth and Minneapolis was outside of Illinois Freight Association territory. The Elgin, Joliet & Eastern rate was a new one to Niles Center, Ill., and its suspension would have left that point without a rate.

## Cleveland Manufacturers Protest Against Proposed Steel Rates

CLEVELAND, May 11.—Thirteen manufacturers of iron and steel products in Cleveland have joined the Cleveland Chamber of Commerce in asking the Interstate Commerce Commission to suspend the new freight rates that have been announced by the Central Freight Association, to become effective May 29, these rates being an application of the decision of the Jones & Laughlin rate case. Application for a suspension of the rates was filed May 7.

It is contended that new rates would impose a serious handicap on Cleveland manufacturers in competition for business in the Middle Western markets for partly finished iron and steel products. The protestants ask the commission to make an investigation into the irregularities and rate variations rather than force litigation, which would be costly to all concerned. Various cases of alleged injustice to the Cleveland manufacturers are pointed out. For example, the new rate from Youngstown to Indianapolis will yield 1.59c. a ton mile for a distance of 339 miles, while for exactly the same distance the Cleveland-to-Chicago rate yields 1.77c. a ton-mile. From Pittsburgh to Anderson, Ind., 344 miles, the new rate will yield 1.62c. a ton-mile. At present rates, the ton-mile yields for all three of these hauls are the same, 1.77c.

The protesting companies include the Bourne-Fuller Co., Cleveland Steel Co., Champion Rivet Co., Betz-Pierce Co., Atlas Bolt & Screw Co., T. H. Brooks & Co., Consolidated Iron & Steel Mfg. Co., Foster Bolt & Nut Mfg. Co., Johnston & Jennings Co., Kirk-Latty Mfg. Co., Lake Erie Bolt & Nut Co., Lamson & Sessions Co., and Variety Iron & Steel Works.

The highest previous production record in the hot mills at N. & G. Taylor Co.'s plant at Cumberland, Md., has been surpassed for the third time since the beginning of the present year. Production of blackplate for the week ended April 10 reached a rate of approximately 528,000 boxes annually.



# Where Steel Exports Went in July-March

Canada Took 310,316 Tons of Nine Leading Items in Nine Months—Japan Retains Second Position with 105,438 Tons of Nine Items, Followed by Cuba with 51,625 Tons

Exports from United States, by Countries of Destination  
(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	March		Nine Months Ended March		March		Nine Months Ended March		March		Nine Months Ended March	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	13,250	11,240	83,252	54,995	15,751	13,047	116,542	113,087	14,203	6,264	102,360	84,189
Canada	12,028	8,179	71,161	42,894	4,052	3,567	20,251	12,145	5,724	4,598	35,977	24,465
Japan	37	36	466	431	234	441	3,821	8,051	7,492	795	52,618	52,916
Cuba	254	122	1,412	799	645	569	9,562	8,887	12	87	648	501
Philippine Islands	...	...	933	848	1,901	1,978	13,949	10,993	...	...	75	454
Mexico	58	228	1,295	738	880	688	6,717	5,102	63	213	63	526
Argentina	...	...	928	...	959	2,468	6,102	40,949	59	14	894	593
Chile	...	...	...	...	501	88	1,201	1,153	...	...	...	...
Colombia	...	...	...	...	543	512	6,297	4,560	...	...	...	...
Central America	...	...	...	...	...	198	...	3,364	...	...	...	...

	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	March		Nine Months Ended March		March		Nine Months Ended March		March		Nine Months Ended March	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	7,113	18,709	105,525	136,620	4,905	7,700	49,232	66,121	3,813	3,960	26,831	22,041
Canada	2,235	261	16,040	8,653	852	206	2,070	4,306	1,497	1,709	9,772	7,514
Japan	2,227	...	9,757	4,378	...	...	...	...	26	3	606	523
Cuba	502	1,329	21,555	37,034	109	411	3,095	624	207	185	1,220	1,293
Philippine Islands	188	116	2,413	3,600	575	...	4,379	1,758	8	...	89	48
Mexico	68	559	4,224	3,013	419	636	3,656	4,096	377	270	3,515	2,706
Argentina	...	...	...	...	621	1,340	5,484	5,919	861	9	2,885	457
Chile	346	2,060	3,913	4,508	...	...	...	...	11	7	46	73
Colombia	...	...	5,023	...	476	549	5,240	5,494	24	...	248	168
Brazil	130	1,344	3,880	6,005	252	1,501	8,118	20,536	7	829	2,521	2,271
Australia	...	...	...	...	70	86	1,109	1,947	...	367	...	1,973
British S. Africa	...	...	...	...	165	1,383	3,153	4,830	...	...	1,522	...

	Tin Plate				Plain Heavy Structural Material				Steel Bars			
	March		Nine Months Ended March		March		Nine Months Ended March		March		Nine Months Ended March	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	15,500	14,424	133,984	104,552	13,408	6,741	93,812	76,155	13,622	12,389	91,985	71,025
Canada	3,538	3,025	25,258	17,159	10,014	4,867	71,873	57,787	9,236	6,616	57,914	31,546
Japan	3,376	1,670	36,147	42,933	915	362	1,009	2,628	140	227	1,014	1,662
Cuba	154	744	2,509	4,176	892	467	7,283	10,127	189	716	4,341	8,096
Mexico	475	764	3,501	3,279	...	...	...	...	745	...	2,017	...
Argentina	402	643	4,775	6,782	...	...	...	...	...	...	...	...
Chile	926	246	4,940	2,731	155	47	1,496	3,004	...	...	...	...
United Kingdom	...	...	...	...	...	...	...	...	1,162	1,986	9,640	11,972
China	682	1,614	15,857	3,673	...	...	...	...	...	...	...	...
British India	...	2,333	9,854	5,390	...	...	...	...	...	...	...	...
Italy	2,494	...	3,962	...	...	...	...	...	...	...	...	...

Exports of Iron and Steel Products from the United States, by Countries of Destination  
(In Gross Tons)

	March 1926	January Through March			March 1926	January Through March	
	1926	1926	1925		1926	1926	1925
Belgium	47	446	3,070	West Indies	8,808	29,912	29,436
Bulgaria	305	306	...	Argentina	5,000	19,064	43,858
Czechoslovakia	...	...	13	Bolivia	146	250	424
Denmark	47	121	154	Brazil	2,264	8,443	9,705
Finland	58	61	258	Chile	5,045	15,060	7,521
France	1,021	5,272	1,311	Colombia	4,482	16,814	9,255
Germany	401	727	948	Ecuador	169	318	526
Greece	446	578	1,041	Falkland Islands	...	1	...
Italy	4,038	7,005	3,680	British Guiana	10	23	258
Netherlands	144	307	503	Dutch Guiana	112	282	18
Norway	192	504	878	French Guiana	46	46	...
Poland and Danzig	...	17	20	Paraguay	12	12	61
Portugal	307	372	255	Peru	2,821	8,863	3,048
Rumania	389	1,408	133	Uruguay	350	1,365	1,459
Soviet Russia in Europe	...	2,704	53	Venezuela	5,096	19,046	8,225
Spain	298	379	1,121	South America	25,554	89,587	84,348
Sweden	95	205	159	India	2,190	10,837	6,231
Switzerland	5	19	1	British Malaya	1,074	3,085	1,151
Turkey in Europe	547	628	695	China	2,132	7,950	7,565
United Kingdom	4,603	11,841	12,114	Java and Madura	963	1,860	926
Yugoslavia and Albania	...	...	220	Other Dutch East Indies	1,034	5,343	1,285
Other Europe	45	46	9	Hongkong	340	549	571
Europe	12,988	32,946	26,736	Japan and Chosen	20,592	66,415	31,424
Canada	76,763	188,422	127,746	Kwangtung	514	3,406	343
British Honduras	14	39	41	Persia	...	...	1,038
Costa Rica	142	510	862	Philippine Islands	4,026	12,818	13,463
Guatemala	909	5,420	1,329	Other Asia	108	165	174
Honduras	532	1,028	1,830	Asia	32,973	112,428	64,171
Nicaragua	374	1,646	776	Australia	1,538	4,785	5,622
Panama	479	2,523	2,284	New Zealand	215	639	423
Salvador	784	4,596	6,844	Other Oceania	15	56	53
Mexico	5,812	22,622	29,621	Oceania	1,768	5,480	6,098
Newfoundland and Labrador	48	147	398	British South Africa	498	1,969	15,231
North America	85,857	226,953	171,731	Egypt	612	1,212	1,155
Bermuda	10	27	61	Liberia	7	31	...
Barbados	...	20	5	Morocco	2	62	24
Jamaica	94	333	342	Portuguese East Africa	349	539	399
Trinidad and Tobago	584	1,330	1,085	Other Portuguese Africa	9	12	96
Other British West Indies	57	167	296	Other Africa	13	29	36
Cuba	6,339	24,008	25,517	Africa	1,490	3,904	16,941
Dominican Republic	689	1,406	1,323	Total	169,438	501,210	399,461
Dutch West Indies	653	1,164	371				
French West Indies	...	3	1				
Haitian Republic	361	1,209	373				
Virgin Islands of U. S.	21	245	62				

## NON-FERROUS METAL MARKETS

The Week's Prices	Cents per Pound for Early Delivery		May 5	May 6	May 7	May 8	May 10	May 11
		Lake copper, New York.....	14.00	14.00	14.00	14.00	14.00	14.00
		Electrolytic copper, N. Y.*..	13.62½	13.55	13.60	13.62½	13.62½	13.62½
		Straits, tin, spot, New York..	64.37½	64.75	64.12½	....	64.00	64.50
		Lead, New York.....	7.85	7.85	7.85	7.85	7.85	7.75
		Lead, St. Louis.....	7.55	7.55	7.55	7.55	7.55	7.55
		Zinc, New York.....	7.10	7.15	7.17½	7.15	7.12½	7.10
		Zinc, St. Louis.....	6.75	6.80	6.82½	6.80	6.77½	6.75

\*Refinery quotation; delivered price ¼c. higher.

NEW YORK, May 11.—There has been very little change in any of the markets except tin, where prices have advanced rather sharply, due largely to the British strike. The effect of the strike here has been to make most markets mark time. There has been very little buying of copper, lead or zinc, and prices have remained almost stationary.

**Copper.**—Demand for electrolytic copper has been of small proportions, but such buying as has been done has been at 13.87½c., delivered, with slight concessions on one or two days. On May 6 some metal changed hands at 13.80c., delivered, and on May 7 about 500 tons at 13.85c., delivered. Most producers are holding quite firmly at 13.87½c., and this week there is practically no metal available below that price. Consumers are well covered and are buying only small amounts as needed, while producers are not inclined to force the market. The statistics for April are expected within a day or two and a showing favorable to sellers is generally looked for, with another decrease in stocks of refined metal. The export market is also quiet, with quotations and bids ranging between 13.70c. and 13.80c., f.a.s. Lake copper is quoted at 14c., delivered.

**Tin.**—Sales of electrolytic tin, principally futures, were large for the week ended Saturday, May 8. Estimates of the total are at least 2000 tons, with consumers and dealers active buyers. May and June deliveries were the principal positions involved. The British strike caused considerable anxiety and a scram-

ble to buy with the climax on May 4 when at least 600 tons changed hands, some placing the total in excess of 1000 tons. The premium on spot delivery continues the feature with about 5c. per lb. ruling over any other delivery. On one day consumers bought all the off-grade tin for May delivery that was available. Saturday the market was dull and yesterday it was stagnant. Today the market was not much better and spot Straits tin was quoted at 64.50c., New York, largely nominal. In London prices today were about £3 to £6 per ton higher than a week ago, with spot standard quoted at £273, future standard at £267 5s. and spot Straits at £281. The Singapore market today was £269 7s. 6d. Arrivals thus far this month have been 1185 tons, with 6461 tons reported afloat.

**Lead.**—The market is practically unchanged and prices are almost stationary. The leading interest continues to quote 7.85c., New York, as its contract price. In the outside market quotations at St. Louis are 7.50c. to 7.60c., or 7.85c., New York. Consumption is heavy and consumers are well covered, with producers fully booked. The foreign situation continues to be the principal factor.

**Later:** The leading producer reduced its quotation late today to 7.75c., New York.

**Zinc.**—Quotations for prime Western zinc range within narrow limits, due largely to the fact that sellers are disinclined to press the market. Demand is only fair. Yesterday one galvanizer bought 200 tons for early shipment and there is a similar inquiry in the market today. Quotations range from 6.75c. to 6.80c., St. Louis, or 7.10c. to 7.15c., New York.

**Nickel.**—Wholesale lots of ingot nickel are quoted unchanged at 35c. with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

**Antimony.**—Chinese metal is a little firmer than a week ago, spot delivery being quoted at 12.75c. to 13c.,

### Metals from New York Warehouse

#### Delivered Prices per Lb.

Tin, Straits pig.....	64.00c. to 64.75c.
Tin bar.....	67.50c. to 68.00c.
Copper, Lake.....	15.25c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.75c.
Zinc, slab.....	8.00c. to 8.50c.
Lead, American pig.....	8.75c. to 9.75c.
Lead, bar.....	11.25c. to 12.25c.
Antimony, Asiatic.....	14.00c. to 15.00c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	30.00c. to 30.50c.
Babbitt metal, commercial grade.....	30.00c. to 35.00c.
Solder, ½ and ¾ guaranteed.....	41.00c.

### Metals from Cleveland Warehouse

#### Delivered Prices per Lb.

Tin, Straits pig.....	69.00c.
Tin, bar.....	71.00c.
Copper, Lake.....	15.00c.
Copper, electrolytic.....	15.00c.
Copper, casting.....	14.00c.
Zinc, slab.....	8.75c.
Lead, American pig.....	8.75c. to 9.25c.
Antimony, Asiatic.....	22.50c.
Lead, bar.....	11.00c.
Babbitt metal, medium grade.....	23.50c.
Babbitt metal, high grade.....	72.50c.
Solder, 50-50.....	41.00c.

### Rolled Metal from New York or Cleveland Warehouse

#### Delivered Prices, Base per Lb.

<b>Sheets—</b>	
High brass.....	18½c. to 19½c.
Copper, hot rolled.....	22½c. to 23½c.
Copper, cold rolled, 14 oz. and heavier.....	24½c. to 25½c.
<b>Seamless Tubes—</b>	
Brass.....	23½c. to 24½c.
Copper.....	24½c. to 25½c.
Brazed Brass Tubes.....	26½c. to 27½c.
Brass Rods.....	16½c. to 17½c.

#### From New York Warehouse

#### Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks.....	12.75c.
Zinc sheets, open.....	13.25c.

## Non-Ferrous Rolled Products

Mill prices in brass, bronze and copper products are unchanged. Zinc and lead sheets were reduced about May 1, zinc sheets ½c. per lb. to 11.25c. and lead full sheets ¼c. to 11.50. No changes have been made since.

### List Prices Per Lb. f.o.b. Mill

On Copper and Brass Products, Freight Up to  
75c. Per 100 Lb. Allowed on Shipments  
of 500 Lb. or Over

<b>Sheets—</b>	
High brass.....	18.87½c.
Copper, hot rolled.....	22.50c.
Zinc.....	11.25c.
Lead (full sheets).....	11.50c.
<b>Seamless Tubes—</b>	
High brass.....	23.50c.
Copper.....	24.25c.
<b>Rods—</b>	
High brass.....	16.62½c.
Naval brass.....	19.37½c.
<b>Wire—</b>	
Copper.....	15.75c.
High brass.....	19.37½c.
Copper in Rolls.....	21.37½c.
Brazed Brass Tubing.....	26.87½c.

### Aluminum Products in Ten Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide....	37.50c.
Tubes, base.....	45.00c.
Machine rods.....	34.00c.



**Rolled Metals, f.o.b. Chicago Warehouse**

Sheets—		Base per Lb.
High brass	.....	18½c. to 19½c.
Copper, hot rolled	.....	22½c.
Copper, cold rolled, 14 oz. and heavier	.....	24½c.
Zinc	.....	12c.
Lead, wide	.....	11.08c.
Seamless Tubes—		
Brass	.....	23½c. to 25c.
Copper	.....	24½c. to 25½c.
Braced Brass Tubes	.....	26½c. to 29½c.
Brass Rods	.....	16½c.

New York, duty paid, with May-June arrivals at 12.87½c. and June-July shipment from China at 12.50c., New York, duty paid.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is obtainable as ingots at 27c. to 28c. per lb., delivered.

**Warehouse Business.**—The downward movement of antimony continues and sellers from stock have dropped their quotations another 2c. per lb. this week, reflecting the weakness of the wholesale market. The decline in copper prices is reflected in jobbers' quotations by a reduction of ¼c. per lb.

CHICAGO, May 11.—The market is dull and shows no improvement. Spot tin has advanced as a result of the uncertainty in England. Copper is unchanged and lead has advanced. Antimony has not gone above

**Old Metals, Per Lb., New York**

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.75c.	13.25c.
Copper, heavy and wire	11.50c.	12.50c.
Copper, light and bottoms	9.50c.	10.75c.
Brass, heavy	7.25c.	9.00c.
Brass, light	6.25c.	7.75c.
Heavy machine composition	8.75c.	10.00c.
No. 1 yellow brass turnings	8.25c.	9.00c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	6.75c.	7.25c.
Lead, tea	5.00c.	6.00c.
Zinc	4.00c.	4.75c.
Sheet aluminum	18.50c.	20.50c.
Cast aluminum	18.50c.	20.50c.

the low of last week. Prices of old metals are nominal and the market is dull and without feature. We quote, in carload lots, Lake copper, 14.12½c.; tin, 65.50c.; lead, 7.90c.; zinc, 6.90c.; in less than carload lots, antimony, 15.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.50c.; red brass, 9.25c.; yellow brass, 8c.; lead pipe, 6.75c.; zinc, 5c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; aluminum, 19c.; all being dealers' prices for less than carload lots.

**REINFORCING STEEL****Awards of the Week 3450 Tons with Close to 11,000 Tons in New Projects Pending**

Awards of concrete reinforcing bars during the week were mostly in small lots, the largest being 700 tons for a Chicago hotel, but among nearly 11,000 tons of pending projects are two of unusual size—4500 tons for harbor improvement at Havana, Cuba, and 3000 tons for concrete roads in Pennsylvania. Awards follow:

- NEW YORK, 300 tons, subway work, awarded by Heyman & Goodman Co., general contractor, to Truscon Steel Co.
- NEW YORK, 150 tons rail steel, building at Spring and Van Dam Streets, to Buffalo Steel Co.
- BROOKLYN, 100 tons, tank foundations, Brooklyn Gas Co., to Igoe Brothers.
- BUFFALO, 150 tons, Republic Metalware Co. and Knowlton Warehouse Co., to unnamed company.
- BATTLE CREEK, MICH., 400 tons, building for Post Cereal Co., to Concrete Steel Co.
- CHICAGO, 400 tons rail steel, to Inland Steel Co., and 200 tons of billet steel for the Davis Hotel, Walton Place and Sheridan Road, to American System of Reinforcing.
- CHICAGO, 700 tons, Sheridan-Aldine Hotel, to American System of Reinforcing.
- CHICAGO, 100 tons rail steel, apartment building, to Olney J. Dean & Co.
- DETROIT, 300 tons, Hotel Detroit, to Bourne-Fuller Co.
- ST. LOUIS, 350 tons, Penrose Street viaduct, to Laclede Steel Co., St. Louis.
- TACOMA, WASH., 100 tons, Masonic Temple, to Pacific Coast Steel Co.
- SEATTLE, WASH., 100 tons, Washington Manor Apartments, to Pacific Coast Steel Co.
- SEATTLE, 100 tons, Cavalier Apartments, to Pacific Coast Steel Co.

**Reinforcing Bars Pending**

Inquiries for reinforcing steel bars include the following:

- BUFFALO, 440 tons, F. N. Burt Co., factory, bids in.
- ROCHESTER, 230 tons, Stromberg-Carlson Telephone Mfg. Co., addition to factory.
- ROCHESTER, 150 tons, Richardson Corporation, addition.
- POUGHKEEPSIE, N. Y., 1000 tons, Mid-Hudson River bridge; general contract bids rejected and new tenders asked.
- NEWARK, N. J., 270 tons, Beth Israel Hospital.

PENNSYLVANIA, 3000 tons, 300 miles of concrete roads in eastern part of State; contracts pending.

DAYTON, OHIO, 400 tons, building for Home Store; Frank Hill Smith, Inc., general contractor.

CINCINNATI, 100 tons, Chamber of Commerce Building; bids close May 15.

CINCINNATI, 100 tons, addition to Deaconess Hospital.

CINCINNATI, 100 tons, Hannaford Building.

CHICAGO, 197 tons, apartment at 1622 Delaware Place; Westcott Engineering Co., general contractor.

CHICAGO, 150 tons, Samuel Gompers School; C. J. DeWitt, low bidder.

CHICAGO, 150 tons, Spencer public school; J. L. Connelly, low bidder.

HAVANA, CUBA, 4500 tons, harbor improvements; general contract awarded to Mendoza & Co., Havana.

**RAILROAD EQUIPMENT****Inquiries for 1950 Cars from Two Roads—  
Illinois Central Wants 50 Engines**

The Delaware, Lackawanna & Western is inquiring for 1500 freight cars, the Georgia & Florida wants 450, and the Illinois Central is in the market for 50 locomotives. Other equipment business pending or placed is in small lots. Details follow:

The Illinois Central Railroad is inquiring for 50 locomotives.

The Delaware, Lackawanna & Western has issued an inquiry for 1000 steel hopper cars of 70-ton and 50-ton capacity, equally divided, and 500 box cars.

The Georgia & Florida has asked for bids on 450 box cars.

The Seaboard Air Line is expected to inquire shortly for 30 passenger coaches and 12 dining cars.

The Louisville & Nashville is in the market for 12 baggage cars and 15 baggage-mail cars.

The Reading has ordered 25 passenger coaches and 5 passenger-baggage cars from the Bethlehem Steel Corporation.

The Atlantic Coast Line is inquiring for 50 steel underframes for freight cars.

The Sinclair Refining Company has ordered 50 10,000-gal. tank cars from the General American Tank Car Corporation.

The Southern Pacific is inquiring for 11 dining cars.

The International Railways of Central America has ordered 16 first-class and 17 second-class passenger coaches and 6 baggage cars from the American Car & Foundry Co.

## FABRICATED STEEL

### Week's Awards 43,500 Tons and New Projects Total Nearly 35,500 Tons

Greater activity in structural steel construction is reflected in the week's awards of 43,500 tons and 35,500 tons in new projects up for bidding. The largest award was 11,300 tons for bridges on the Santa Fe Railroad to be fabricated by the American Bridge Co. There was also 15,300 tons in two office buildings and a school in New York and 3100 tons in a building in Washington, while 3200 tons is required for 20 barges. Among pending projects the largest is 4000 tons for a municipal market viaduct in New York. For gates in the Welland Canal 16,000 tons of steel will be needed. Awards follow:

PENNSYLVANIA RAILROAD, 200 tons, bridge, to American Bridge Co.  
BALTIMORE & OHIO RAILROAD, 450 tons, bridge, to American Bridge Co.  
NEW YORK, NEW HAVEN & HARTFORD RAILROAD, 475 tons, three bridges; one of 175 tons to McClintic-Marshall Co.; one of 150 tons to Shoemaker Bridge Co., and one of 150 tons to Bethlehem Steel Corporation.  
BEDFORD HILLS, N. Y., 200 tons, State Sanitarium, to McClintic-Marshall Co.  
NEW YORK, 600 tons, subway platforms and other miscellaneous subway work, to American Bridge Co.  
NEW YORK, 4000 tons, Theodore Roosevelt High School, to Bethlehem Fabricators, Inc.  
NEW YORK, 4300 tons, General Motors Co., building at Columbus Circle, to Taylor-Fichter Steel Construction Co.  
NEW YORK, 7000 tons, Consolidated Gas Co., gas holders, office building and plant on East Fourteenth Street, to McClintic-Marshall Co.  
CLEVELAND, 400 tons, Cleveland Electric Illuminating Co., transmission towers, to Blaw Knox Co.  
SCHENECTADY, N. Y., 175 tons, General Electric Co., warehouse and service building, to Pittsburgh Bridge & Iron Co.  
OLBAN, N. Y., 250 tons, Clark Brothers, factory, to Rogers Structural Steel Co., Corey, Pa.  
MONTREAL, tonnage unstated, superstructure for bridge across the St. Lawrence River to cost \$7,200,000, to Dominion Bridge Co.  
WASHINGTON, 3100 tons, National Press Building; Crawford-Weigel Erecting Co., Cleveland, general contractor, fabricating to be done by McClintic-Marshall Co.  
EASTON, PA., 150 tons, Gunning silk mill, to Bethlehem Construction Co.  
WEST SHAMOKIN, PA., 150 tons, St. Stephens' parochial school, to Bethlehem Construction Co.  
WILKINSBURG, PA., 425 tons, Penn-Lincoln Hotel, to Bolinger Andrews Construction Co.  
CRAFTON, PA., 1150 tons, Chartier Creek bridge, to American Bridge Co.  
CRAFTON, PA., 250 tons, St. Paul's Orphanage dormitory to McClintic-Marshall Co.  
PITTSBURGH, 3200 tons, 20 coal barges, for Hillman Transportation Co., to American Bridge Co.  
SPRINGFIELD, OHIO, 150 tons, highway bridge, to Jones & Laughlin Steel Corporation.  
NEW ALBANY, IND., 300 tons, two barges for E. T. Slider, to Jones & Laughlin Steel Corporation.  
BIRMINGHAM, 1350 tons, Hotel Jefferson, to Virginia Bridge & Iron Co.  
ATCHISON, TOPEKA & SANTA FE, 11,300 tons, bridges, to American Bridge Co.  
CHICAGO, 775 tons, subway bridges for Chicago & Western Indiana Railroad, to McClintic-Marshall Co.  
KENSINGTON, ILL., 1350 tons, track elevation for Chicago & Western Indiana Railroad, to American Bridge Co.  
EAST ST. LOUIS, ILL., 200 tons, extension to Darling & Co. fertilizer building, to Austin Co.  
KRAGEN, ARK., 375 tons, Missouri Pacific bridge over Arkansas River, to Virginia Bridge & Iron Co.  
OREGON, 325 tons, Snake River highway bridge, to Virginia Bridge & Iron Co.  
OREGON, 125 tons, Mary's River and Umpqua River highway bridges to unnamed bidder.  
SAN DIEGO, CAL., 565 tons, Peery Building, to Moore Dry Dock Co.  
ALAMEDA, CAL., 180 tons, Masonic Temple, to California Steel Co., Oakland.

#### Structural Projects Pending

Inquiries for fabricated steel work include the following:

CENTRAL RAILROAD OF NEW JERSEY, 150 tons, bridge.  
PENNSYLVANIA RAILROAD, 450 tons, bridges.  
NEW YORK CENTRAL, 1500 tons, bridges.

STATE OF VERMONT, 250 tons, highway bridge.  
NEW YORK, 4000 tons, municipal market viaduct in the Bronx.  
JAMAICA, L. I., 200 tons, building for Home Title & Insurance Co.  
PHILADELPHIA, 1300 tons, restaurant building for Horn & Hardart, Inc.  
PHILADELPHIA, 500 tons, office building at Juniper and Arch Streets.  
BALTIMORE, 600 tons, theater.  
ORLANDO, FLA., 600 tons, court house.  
KNOXVILLE, TENN., 350 tons, Southern Railway car shop.  
CINCINNATI, 350 tons, Crosley Mfg. Co., addition to plant; bids in.  
CINCINNATI, 400 tons, water tanks for city of Cincinnati; bids close May 19.  
DAYTON, OHIO, tonnage unknown, hotel; Fred J. Hughes, U. B. Building, Dayton, architect.  
TOLEDO, OHIO, 400 tons, Security Savings Bank building.  
CLEVELAND, 200 tons, factory, Rickersberg Brass Co.  
CHICAGO, 2500 tons, office building at Wabash and Lake Streets for doctors and dentists.  
WABASH RAILWAY CO., 1881 tons, three bridges; one at Decatur, Ill., 1580 tons; one at Lafayette, Ind., 153 tons, and one at Detroit, 148 tons.  
KANSAS CITY, MO., 1000 tons, Loew's theater.  
LONG BEACH, CAL., 1100 tons, Masonic Temple.  
LEWISTON, IDAHO, 309 tons, bridge across Clearwater River near Kooskia, Idaho; bids May 19, Commissioner of Public Works.  
SAN FRANCISCO, 3500 tons, shapes and plates for car construction for Southern Pacific Equipment Co.; bids about May 15.  
SAN FRANCISCO, 150 tons, billets, Standard Oil Co.; bids being taken.  
OAKLAND, CAL., 350 tons, Frick School, Judson Mfg. Co., Oakland, low bidder.  
BERKELEY, CAL., 200 tons, Odd Fellows Hall; bids being taken.  
TACOMA, WASH., 250 tons, Masonic Temple.  
SEATTLE, WASH., 200 tons, Mines Building, University of Washington.  
WELLAND, ONT., 16,000 tons, gates for Welland Canal; general contract awarded to P. Lyall & Sons, Montreal, but steel awards not definitely placed.

### Uniform Sales Contract for Concrete Reinforcing Bars

Concrete Reinforcing Steel Institute, Tribune Tower, Chicago, is forwarding to its members final draft of the uniform sales contract, approved and adopted by members of the institute on March 10, at the Atlantic City meeting. This contract represents a careful and comprehensive study of the industry by the institute committee on standard practice and has been amended to meet the experience of a large number of its members and its legal counsel.

The members of the Institute are being requested to put this contract into effect at once in order that full benefit may be derived from its universal adoption and use. Two treatments are proposed for the freight allowance paragraph, the one where material is to be shipped by rail to a point outside of the city where material is rolled or carried in stock, and the other when material is to be delivered to the job by truck.

### Bolt, Nut and Rivet Merger

Negotiations that are being conducted by the Lamson & Sessions Co., Cleveland, for the purchase of the Kirk Latty Co., Cleveland, have reached a point which indicates that the merger will be effected and a formal announcement of the acquisition of the latter by the former is expected in a few days. Both companies manufacture bolts, nuts and rivets.

Greatly expanded retail sales of automobiles are making heavy inroads into surplus stocks of cars in dealers' hands and at the factories, according to *Automotive Industries*. Each of the last three weeks has shown a substantial gain in deliveries, attributed to good spring weather. Truck and bus business is in perhaps the most satisfactory state in its history, with virtually all the important companies showing increases this year.



## PERSONAL

Samuel M. Vauclain, president Baldwin Locomotive Works, Philadelphia, who has been in Russia for some time, left Moscow for Paris last week.

Frank A. Scott, president Warner & Swasey Co., Cleveland, is in England.

C. S. Stouffer has resigned as works engineer for the Kewanee plant of the Walworth Co. and has become associated with Stanley G. Flagg & Co., Inc., Stowe, Pa., in the same capacity. After graduating from Lehigh University in 1906, he was with the Westinghouse Electric & Mfg. Co., East Pittsburgh, for three years. Then he went with National Tube Co., Kewanee works, and its successor, Walworth Co., as draftsman, estimator, mechanical engineer and, since 1919, as works engineer.

W. Scott Thomas, 316 National Exchange Bank Building, Providence, has been appointed as a special foundry equipment sales representative in the New England section for the Northern Engineering Works, Detroit. Mr. Thomas has been connected with the J. W. Paxson Co. as New England manager and has had extensive experience in the foundry equipment line. He will handle the Northern "Newten" cupola, electric and air hoists, as well as other material-handling products.

H. Kempner has been appointed sales manager of the "Lo-Hed" electric hoist division, American Engineering Co., Philadelphia. He has been in charge of sales promotion work for the company, including handling advertising and publicity, for the last three years. He studied electrical engineering at Harvard University and for four years was an instructor in physics at Pratt Institute, Brooklyn. He formerly was connected with the engineering department of the Western Electric Co. in New York, designing telephone apparatus and inspecting and testing central station installations. From 1919 to 1923 Mr. Kempner was in the service of the McGraw-Hill Co., handling accounts in a number of papers published by this company, including *American Machinist*, *Electrical World* and *Power*. In 1920 he was sent to Washington to organize and take charge of the disposal of surplus war property for the Government. In this work he planned and supervised the execution of advertising campaigns that resulted in the sale of millions of dollars' worth of surplus war materials.

Frank C. Roberts, Jr., has been appointed sales manager Mackintosh-Hemphill Co., Pittsburgh, assuming the position on May 1. For the past three years Mr. Roberts was sales manager R. S. Newbold & Son Co., Norristown N. J., and for the four preceding years was associated with the Philadelphia Roll & Machine Co., Philadelphia, as sales engineer. He was graduated from Princeton University in 1916 and saw active overseas service in the World War in the Aviation Corps. He is a son of Frank Calvin Roberts, New York engineer, who has made many contributions in inventive and educational ways to engineering science.

D. L. Ferdinand is associated with the Ziv Steel & Wire Co., at 2945-51 West Harrison Street, Chicago, as manager of the cold-rolled and hot-rolled steel department.

Robert Neal Piper has become associated with the Cincinnati Shaper Co., Cincinnati, as a sales engineer. He was formerly sales representative of the National Automatic Tool Co., Richmond, Ind., in Buffalo territory.

E. G. Rich, for the past two years with the Cincinnati office of the Bourne-Fuller Co., has resigned to accept a position as sales engineer with Hugh J. Baker & Co., Indianapolis, building contractor.

John A. Camm, formerly sales manager Kearney & Trecker Corporation, Milwaukee, well known in machinery circles, has joined the sales force of the Seneca Falls Machine Co., Seneca Falls, N. Y., and will represent that company for the sale of Lo-Swing and Short-Cut lathes in the Chicago territory. Mr. Camm's headquarters will be 662 Forty-eighth Street, Milwaukee.

Frank H. Cole, metallurgist, Walworth Co., Boston, has been elected chairman for the coming year of the Boston Chapter of the American Society for Steel Treating. Leslie D. Hawkridge, vice-president Hawkridge Brothers Co., was elected vice-chairman and Howard E. Handy, metallurgist Saco-Lowell Shops, was reelected secretary-treasurer.

C. D. Shepard, who has been associated with Rogers Brown & Crocker Brothers, Inc., for the past seven years, most of that time in the Pittsburgh district office, has resigned and will join the sales organization of Baker, Trubee & Putnam, Inc., 486 Ellicott Square, Buffalo, investment bankers.

L. A. Roberts, formerly superintendent of maintenance, alloy division, United Alloy Steel Co., Canton, Ohio, is now affiliated with the Clark Controller Co., Cleveland, as sales representative in Ohio territory.

L. W. Egan, formerly special engineer for the American Steel Foundries, is now sales representative with the Clark Controller Co., Cleveland.

H. C. Fletcher, treasurer Pacific Pipe & Supply Co., Los Angeles, who has been with this company since 1910, has resigned, effective immediately. Mr. Fletcher will take a vacation and later make announcement as to his future plans.

M. H. Starr has resigned as experimental engineer with E. & T. Fairbanks, St. Johnsbury, Vt., and has become chief engineer Howe Scale Co., Rutland, Vt. The new arrangement was effective April 1.

Edward H. Ruck has become mechanical engineer W. W. Sly Mfg. Co., Cleveland. Mr. Ruck was formerly connected with the White Motor Co. in a similar capacity and has had 20 years' experience.

Effective May 1, Harold Butt has been appointed controller Colorado Fuel & Iron Co. and its subsidiaries.

Edward E. Marshall has been elected secretary-treasurer of the Bearings Co. of America, Lancaster, Pa.

J. I. Burgess has been placed in charge of sales of machine tools and threading tools of the National Acme Co., Cleveland, in the company's home territory, which includes Ohio, Kentucky and West Virginia. H. S. Mitchell has been appointed purchasing agent. Effective June 1, the sales of the company's products in the Buffalo territory will be handled by W. G. Furlong.

S. B. Haarbye has been appointed superintendent of the sheet and tin mills of the Trumbull Steel Co., Warren, Ohio, succeeding John Patton, who has resigned. Mr. Haarbye was formerly connected with the American Sheet & Tin Plate Co., of which he was assistant chief engineer when he resigned two years ago. Since then he has been engaged in consulting engineering and has recently been engaged in supervising alterations at the Trumbull plant designed to increase the efficiency of pair heating furnaces and the mills. M.

Ziegler has been appointed superintendent of the cold strip mills of the Trumbull company, succeeding M. B. Hinman, who has resigned, and S. A. Daniels, formerly of the Republic Iron & Steel Co., has been appointed superintendent of roll turning department, succeeding John Hoover.

Dr. Richard Moldenke, Watchung, N. J., left last week on a business trip to Honduras, to be gone probably about two months.

Edwin P. Gaffney has been appointed manager of the machinery steel division of the Crucible Steel Co. of America, with headquarters at 17 East Forty-second Street, New York. He recently resigned as New York manager of Wheelock, Lovejoy & Co., New York, steel merchants, with whom he was associated for 14 years. He opened and managed several of their branches, having been located successively in their offices in Detroit, Chicago and New York.

T. R. Goodridge has been appointed sales representative in the Cleveland district for the Superior Steel Products Co., Monaca, Pa., with offices at 605 Swetland Building, Cleveland. Mr. Goodridge has had considerable experience in marketing steel products and will handle cold drawn steel in rounds and hexagons of  $\frac{5}{8}$  in. diameter and smaller, as well as cold drawn free-cutting Bessemer screw stock for automatic screw machine work.

Dean R. Wilson, one of the founders of the Anchor Drawn Steel Co., Latrobe, Pa., and its president since organization, has disposed of his interest in the company to the Vanadium Alloys Steel Co., Latrobe, Pa., and will hereafter devote his time to other personal interests. W. W. Noble, vice-president and general manager of sales of the Anchor company since its organization, also has retired from the company. Mr. Noble's plans for the future are indefinite.

A. L. Luria, of Luria Brothers & Co., Reading, Pa., iron and steel scrap, sailed on May 7 for Europe and will be gone five or six weeks.

### Program Arranged for San Francisco Meeting of Mechanical Engineers

Five technical sessions, at which 14 papers will be presented, have been arranged for the spring meeting of the American Society of Mechanical Engineers, to be held in San Francisco, June 28-July 1.

Two simultaneous sessions, one on petroleum and the other on industrial training and education are planned for the morning of June 29. Papers to be presented at the latter session are: "Education and Training of Apprentices on the Pacific Coast," by Paul Eliel; and "The Growth of University Extension Training of the Non-College Type for the Industries of the West," by J. L. Kerchen.

Fuels and railroad, hydraulic, and oil and gas power sessions will be held simultaneously on the morning of June 30. One of the three papers at the fuels and railroad session will be on "The Development of the 'Caterpillar' Tractor and Its Application to Industry," by Pliny E. Holt, vice-president of the Holt Mfg. Co., Stockton, Cal.

A reception and dance have been arranged for the evening of June 28, and the banquet will be held on the evening of June 30. Several excursions, including a steamer trip on San Francisco Bay, have been planned.

Hickman, Williams & Co., New York and Philadelphia, have taken over the Boston office at 185 Devonshire Street of Alley & Page, Inc., which is being liquidated. Rufus W. Page has been appointed resident manager in Boston with F. C. Knight of the Alley & Page organization and D. R. Simonds of Hickman, Williams & Co. on the sales staff. Mr. Page has been identified with the Boston territory for many years.

## OBITUARY

CHARLES LEONARD ROWLAND, Carbondale, Pa., mechanical engineer and inventor of a container for transporting chlorine gas overseas during the war, died on April 18 in New York. He was born in Brooklyn, Nov. 28, 1852. He began his business career in Brooklyn, establishing his first plant, the Morton Iron Works, specializing in gas works construction, in 1888. In 1908 he founded and built the American Welding Co. at Carbondale, of which he was president until last February, when the plant was merged into the American Car & Foundry Co. He was a member of the American Society of Civil Engineers, the Compressed Gas Manufacturers' Association and the American Society for Testing Materials. He was a director of the Manufacturers' Association of New York, president of the Parkway Improvement Co., and for many years president of the Great Neck Realty Co. His wife and four brothers survive.

ANDREW CHARLES LOUDON, vice-president Superheater Co., Ltd., Montreal, died in Burlington, Vt., on April 11, after a few days' illness, from influenza and pneumonia. He was born July 7, 1883, at Valleyfield, Que. He entered upon an apprenticeship course with the Canadian Pacific Railway in 1901 and, upon completion, entered McGill University in 1902, from which he was graduated in 1906. He then entered the engineering department of the American Locomotive Co. In 1907 he went with the Grand Trunk Railway as roundhouse foreman; in 1909 he became draftsman for the Delaware & Hudson and later joined the test department of the Atchison, Topeka & Santa Fe. In 1910 he was employed in construction work by the Grand Trunk Pacific and later was foreman of locomotive and car repairs. Leaving railroad work in 1912, he became assistant editor in charge of the Car Builders' Dictionary, subsequently becoming associate editor *Railway Mechanical Engineer*. Mr. Loudon became associated with the Superheater Co. of New York in April, 1917. In July, 1920, he was placed in charge of the Superheater Co., Ltd., of Canada, of which he became vice-president in January, 1921.

BRIGADIER-GENERAL SIR ALEXANDER BERTRAM, president John Bertram & Sons Co., Dundas, Ont., machine tool manufacturer, died on April 24 at Montreal, Que., in his seventy-third year. In addition to being engaged in machine tool manufacturing he was prominent in military affairs in Canada.

ROBERT P. ROSS, JR., secretary of the I. H. Johnson Co., Philadelphia, manufacturer of machine tools, died of apoplexy at his Philadelphia home on April 24. He was 64 years old and had been connected with the I. H. Johnson Co. for 45 years. He is survived by his wife and a sister.

JAMES GLEDHILL, a blast furnace operator who had been connected with Eastern furnaces for many years, died April 19 at his home at Lykens, Pa. He was in his early fifties. He was formerly general superintendent of the Bethlehem Steel Corporation furnaces at Lebanon, Pa., and also served the Replogle Steel Co. in the same capacity at its furnaces at Wharton, N. J. Prior to that he was with the Pennsylvania Steel Co. at Steelton, Pa. He was a graduate of Lehigh University, Bethlehem, Pa.

KEPPELE HALL, management engineer, died of influenza in a New York hotel, April 25. He was born in Newark, N. J., 53 years ago and received his degree in electrical engineering at Princeton University in 1895. Until recently he was production manager of Joseph & Feiss, Inc., Cleveland. Previous connections include the National Cash Register Co., as chief engineer; the Western Electric Co.; the Tabor Mfg. Co., and the Clinton Wire Cloth Co. He was a lieutenant-



colonel during the World War. He was a member of the American Society of Mechanical Engineers and of the Taylor Society, having served as a director of the latter.

LEONIDAS MERRITT, who as a lumberman was one of the first discoverers of iron ore on the Mesaba range, died at his home in Duluth, Minn., on May 9, aged 82 years. He was born in Chautauqua County, N. Y., Feb. 20, 1844, and the family removed to Duluth in 1855. Associated with his eight brothers in lumbering he engaged in an exploration in the wilds of northern Minnesota which lasted for five years and culminated in the discovery of the first major iron deposit in November, 1890. Shipments on a commercial scale began in 1892. Enlisting financial support in New York, Leonidas and Alfred Merritt built the Duluth, Missabe and Northern Railroad and hauled machinery into the wilderness to operate the mines they had opened up. Alfred Merritt was the road's first president. The panic of 1893 involved both mining and railroad interests so seriously that the control of the road and mines was lost to John D. Rockefeller. The latter had bought \$1,000,000 of the bonds of the railroad and had made large advances for the opening of the Mountain Iron and other Merritt mines. The subsequent history of the Mesaba range and its low-cost open-pit mining is written large on the records of the steel industry in the past 30 years.

ROBERT SANFORD RILEY, president Riley Stoker Corporation and a director of the Norton Co., Worcester, Mass., died at his home in Worcester, after a long sickness, on May 7, at the age of 51 years. He was born in Hamilton, Ont., July 26, 1874, the son of Robert T. Riley, banker, now of Winnipeg. He was graduated in mechanical engineering from the Worcester Polytechnic Institute, with honors, in 1896. After a short period as an apprentice in a locomotive works, he took up marine engineering in the Cramp shipyard and the New York Shipbuilding Co. He became a practical marine engineer and as chief engineer served on auxiliary ships of the United States Navy, including three years on the Asiatic station, during which the Boxer campaign was waged. He held a United States chief engineer's license, and the highest certificate of competency as a marine engineer from the British Board of Trade. Mr. Riley began his career in automatic mechanical stokers when he developed the Taylor stoker for the American Ship Windlass Co., Providence, R. I., of which corporation he was president from 1905 to 1911. In the latter year he sold his interest and established the Sanford Riley Stoker Co., with plant at Worcester, to develop and manufacture a stoker of his own invention. It was successful and the business grew rapidly. The stoker has been installed in large power plants all over the world. The company added other stokers to its line from time to time, absorbing the Murphy Iron Works and Underfeed Stoker Co., both of Detroit; the United Machine & Mfg. Co., Canton, Ohio, and the A. W. Cash Co., Decatur, Ill. Finally, about two years ago, the present corporation was organized, with Mr. Riley as its president and managing head. He also established the Riley Engineering & Supply Co., Ltd., Toronto, and the Riley Stoker Co., Ltd., London, England. Mr. Riley was a member of the American Society of Mechanical Engineers. Recently he was asked that he permit his name to be presented to the society as nominee for president. This honor he declined. He was a member of the Society of Naval Architects and Marine Engineers, the Engineers Clubs of New York and Boston, Worcester Club, Tatnuck Country Club and other Worcester social organizations. In the World War he was chief of the performance division of the Emergency Fleet Corporation. He leaves Mrs. Riley, three sons and two daughters.

VICTOR ANGERER, dean of street railroad track work engineers, and well known in both the street and steam railroad fields, died of pneumonia at Ridley Park, Pa., on May 5. He was a native of Vienna, Austria, and was 64 years of age. Shortly after graduating at 17 from a technical school in Vienna, he came to the United States

and for about four years was with William Sellers & Co., Philadelphia, as draftsman. In 1884 he became connected with William Wharton, Jr., & Co., Inc., as mechanical engineer. After serving in various engineering and supervising capacities, he became vice-president and general manager in 1904. On the consolidation of William Wharton, Jr., & Co., Inc., and the Taylor Iron & Steel Co. in 1912 he was made vice-president of the Taylor-Wharton Iron & Steel Co., also of its subsidiaries, William Wharton, Jr., & Co., Inc., Easton, Pa., the Philadelphia Roll & Machine Co., and Tioga Steel & Iron Co., Philadelphia. In 1922 he was made a director, continuing as such until his death. Mr. Angerer introduced the use of manganese steel in electric railroad track work in 1894, and on steam railroads in 1899. He originated a number of designs of manganese steel track structures now in general use. For a number of years he gave instruction in the Franklin Institute in Philadelphia. His association and club memberships included the American Iron and Steel Institute, American Electric Railway Engineering Association, American Railway Engineering Association, American Society for Testing Materials, Engineers Club of New York, Engineers Club of Philadelphia, and the Franklin Institute.

SAMUEL PRICE WETHERILL, long identified with the zinc industry, died recently of heart failure at his home in Philadelphia. Mr. Wetherill was a leading figure in merging several zinc companies of Pennsylvania and New Jersey into the New Jersey Zinc Co., one of the largest organizations of its kind in the world. Until a decade ago he was a director. Mr. Wetherill was born in Saugerties, N. Y., May 17, 1846. Upon becoming of age he went into the business of manufacturing and selling paints. Later he became associated with his brother, the late John Price Wetherill, and August Heckscher, in founding the Lehigh Zinc & Iron Co., South Bethlehem, Pa. That organization was among the several later merged into the New Jersey Zinc Co.

CHARLES R. TALBOTT, president and founder C. R. Talbott Co., Cincinnati, iron and steel jobber and direct mill agent, died at his home in Fort Thomas, Ky., on May 5. He was 76 years of age, and had been ill for seven months previous to his death. The company of which he was the head has been the representative of the Union Drawn Steel Co. in Cincinnati territory for many years.

CARL HERING, noted consulting electrical engineer, died in Philadelphia on May 10 at the age of 66. He was born in Philadelphia March 29, 1860, the son of the late Dr. Constantine Hering, one of the founders of homeopathy in America. He was graduated from the University of Pennsylvania. The honorary degree of doctor of science was conferred in 1912. He took up the study of electrical engineering while instructor in mathematics and assistant in mechanical engineering in the University of Pennsylvania and later took post-graduate work in Darmstadt. He was instructor in polytechnikum in Darmstadt before returning to Philadelphia in 1884, where he had since engaged in practice. He specialized in electric furnaces, electrochemistry, physical research and patent litigation. Mr. Hering was delegate and juror of awards on electricity at twelve expositions and was United States juror at the Paris Expositions in 1889 and 1900. In the latter year he was United States delegate to the International Electrical Congress in Paris. He also was American delegate to several other international conferences and was twice decorated by the French Government. He was a former president of the American Institute of Engineers, the American Electrochemical Society and the Engineers Club of Philadelphia. He was an honorary member of the New York Electrical Society. He compiled the "Digest of Electrical Literature" and was the author of "Conversion Tables," "Tables of Electrochemical Equivalents" and other books, as well as numerous articles in technical journals, and had read many papers before engineering and other scientific societies.

## NEW TRADE PUBLICATIONS

**Feed-Water Heaters.**—Cochrane Corporation, Seventeenth Street, Philadelphia. Catalog of 64 pages devoted to feed-water heaters of all types for steam plants. This covers open, metering, deaerating, steam stack, vacuum, back pressure, closed or surface, jet, storage and hot process softeners for boiler feed and other purposes. The catalog is well illustrated with both half tones and diagrams and shows a wide variety of equipment, together with its method of connection in use.

**Open-Hearth Furnaces.**—American Bosshardt Furnace Corporation, 347 Madison Avenue, New York. A pamphlet entitled "Bosshardt Open-Hearth Furnaces" describes this small open-hearth furnace, a Swiss invention, of unique type. It is beautifully illustrated with photographs of the furnace and of some steel castings made therefrom and contains a discussion of the role of this furnace in the foundry.

**Refractories.**—Quigley Furnace Specialties Co., Inc., 26 Cortlandt Street, New York. "Hytempite in the Foundry" is a 12-page pamphlet describing various applications of hytempite in the iron, steel and brass foundries.

**Oxygen.**—Air Reduction Sales Co., New York. A circular entitled "Industrial Gases" discusses the value of purity of oxygen in metal cutting and the question whether 10 per cent more or less in operating cost means much.

**Special Discussions.**—Republic Flow Meters Co., 2240 Diversey Parkway, Chicago. A pamphlet announces articles on "Boiler Room Operation" by Prof. G. F. Gebhardt, and "Steel and Its Treatment" by Prof. H. M. Boylston, and one on "Ceramics" by Prof. C. W. Parmelee.

**Steel Making Processes.**—A. A. Rackoff, 1534 West Fifth Avenue, Gary, Ind. A 4-page pamphlet explaining the process and apparatus of the "Spiral overflow process" which is offered as a mechanical method for cleaning and improving the qualities of steel and other metals.

**Malleable Castings.**—American Malleable Castings Association, Cleveland, Ohio. A series of four industrial bulletins, Nos. 50 to 53, containing pertinent facts about certified malleable iron covering various physical tests.

**Small Motors.**—General Electric Co., Schenectady. Bulletins GEA-6, GEA-71 and GEA-246 are devoted to motors of 200 hp. and less. The first deals with squirrel cage motors of 15 to 150 hp. for general purposes, the second with wound rotor induction motors of  $\frac{3}{4}$  to 10 hp., and the third with general purpose synchronous motors of 20 to 200 hp. All show leading details and give essential descriptions of the units.

**Demagnetizer.**—John P. Lacy, Seneca Falls, N. Y. Folder covering the Thorn demagnetizer, designed to speed up production by preventing the sticking of chips, from magnetic attraction.

**Power Plant Equipment.**—Ernest E. Lee Co., 115 South Dearborn Street, Chicago. Catalog of 16 pages devoted to various types of power plant equipment handled by the Ernest E. Lee Co., and made by more than a dozen manufacturers in various parts of the United States. Pumps, piping, valves, expansion joints, instruments, blowers, separators, heaters, coal crushers, regulators, etc., are included.

**Flexible Couplings.**—Clark Controller Co., Cleveland. Eight-page bulletin, 103, devoted to flexible couplings for direct connected loads. Compensation is arranged for either angular or parallel misalignment between the two halves of the coupling.

**Electric Apparatus.**—Allen-Bradley Co., Milwaukee. A series of loose-leaf folders with tab indexes covering controllers, rheostats, resistors, starters, battery chargers and accessories. The size is  $8\frac{1}{2} \times 11$  in.

**Refractory Cement.**—Inland Fire Brick Co., Cleveland. A six-page pamphlet,  $3\frac{1}{2} \times 6\frac{1}{4}$  in., describing "Brixaver," a refractory cement for bonding brick, for ramming-in linings and patching and sealing surfaces in cupolas, open-hearth furnaces, blast furnaces and stoves, converters, ladles, soaking pits, heat treating and a wide variety of other furnaces, also boilers and chimneys. It is said to resist operating temperatures up to 3300 deg. Fahr.

## Industrial Notes

J. Barraja-Frauenfelder & Co., engineers, 8 Bridge Street, New York, announce a consulting and advisory service on oil engines and their application to industry. Research and analysis, practical advice to manufacturers, statistics, market investigations, etc., are comprised within the contemplated service. The senior advisory engineer is Rear-Admiral Charles W. Dyson, U. S. N., retired, for many years chief of the design division of the Bureau of Engineering in the United States Navy Department. Branch offices are maintained in Philadelphia, Washington, San Francisco and Los Angeles, while there are correspondents in Great Britain and in seven countries on the Continent.

The Bonney Forge & Tool Works, Allentown, Pa., has enlarged its sales organization by the addition of two men who will sell the "C-V" chrome vanadium wrenches and other Bonney products in the following territories: Ronald Wixson will cover Florida, Georgia, North Carolina, South Carolina, Virginia and West Virginia. I. K. Fox will have Colorado, Kansas, part of Louisiana, Arkansas, New Mexico, Oklahoma and Texas.

Carroll-Pierce, Inc., has been formed as tool engineer. W. M. Carroll was formerly president Carroll Engineering Co., engaged in the same line of business. E. M. Pierce is a designer who has been connected as designer and chief draftsman with Barber & Coleman, the old Jeffery Automobile Co., Holt Mfg. Co. and a number of others. The new combination combines the business knowledge and ability of Mr. Carroll and the engineering experience and ability of Mr. Pierce. The new firm will try to specialize on special machine design.

W. W. Sproull, 2111 Dueber Avenue, Canton, Ohio, is engaging in the warehousing and distribution of "second" sheets and shearings and hot and cold rolled strip steel. Mr. Sproull's long experience in the industry is said to have enabled him to introduce many novel and economical features into the business.

George Levy Co., iron and steel products, has been established at 200 Broadway, New York, to specialize in the handling of seamless and other classes of tube and pipe, mostly for export. Scrap iron and steel will be handled.

## Trade Changes

The Henry Weis Mfg. Co., Atchison, Kan., maker of sheet steel articles and particularly of building units, such as door frames and trim, partitions and cubicles for shower baths, dressing rooms, toilets and other purposes, is moving its plant to Elkhart, Ind. A modern factory has been built there, which will afford enlarged and more efficient production facilities. Henry Weis, president of the company, founded it in 1876, at the age of 30.

The Cincinnati Engineering Tool Co. has opened an office at room 1810, Singer Building, 149 Broadway, New York.

John Fox & Co., general foundry and machine work, have moved their offices to the forty-first floor of the Woolworth Building, New York, and are now located in rooms 4112 and 4114.

The Sun Machinery Co., Inc., 39 Hamilton Street, Newark, N. J., has moved to 68-70 Clinton Avenue, Newark.

The Sullivan Machinery Co., Chicago, has moved its Knoxville office, E. L. Thomas, manager, from the old location at 614 Market Street to new and larger offices, rooms 611-15 General Building, 623 Market Street.

The Signal Engineering & Mfg. Co., 533 Canal Street, New York, is now located in new and more commodious quarters at 154 West Fourteenth Street, New York, at Seventh Avenue.

Smith's Inventions, Inc., Minneapolis, has changed its name to Smith Welding Equipment Corporation. This change in name will in no way affect the policy or personnel of the company.

The Stewart Mfg. Corporation, Chicago, has changed its name to Stewart Die Casting Corporation.

The Donahue Steel Products Co., Inc., 204 North Jefferson Street, Chicago, has moved to 1147 South Washtenaw Avenue, Chicago.

The American Cast Iron Pipe & Foundry Co., Birmingham, Ala., has removed its New York office from 261 Broadway to the twenty-eighth floor at 165 Broadway.



# Machinery Markets and News of the Works

## BUYING IN FAIR VOLUME

### Machine Tool Business Quieter but There Has Been No Marked Falling Off

#### Largest Purchase Pending Is That of Brooklyn-Manhattan Subway Calling for About 50 Tools and 24 Cranes

WHILE reports from various machine tool selling centers agree that buying is on a somewhat smaller scale than in April, machine tool manufacturers who gathered at Providence, R. I., last week for a convention were almost unanimous in reporting that conditions from a manufacturing standpoint are quite satisfactory. Nearly all tool builders have a fairly good volume of orders on their books, sufficient in most cases for two or three months of average operation. While admitting that orders are fewer in number, they point out that there has been no serious slump.

In the New York district attention is centered on

the large inquiry of the Brooklyn-Manhattan Transit Co. calling for bids on about 50 tools, 24 overhead electric cranes and two transfer tables. A request to bidders to have figures in by May 19 possibly indicates that early action on this list may be expected.

Railroad orders and inquiries are of negligible amount. The Carolina, Clinchfield & Ohio is in the market for four gap lathes. The Nickel Plate, from which a small list was expected, has postponed the issuance of it until August. The Rock Island and the Union Pacific have each inquired at Chicago for a few machines.

The flooding of the market with used tools is again a matter of comment in some sections. About 1000 tools will be offered at auction within the next 10 days by three companies in the East and Central West.

Eight overhead cranes have been purchased for Wabash railroad shops at Decatur, Ill. The New York Central is inquiring for three 20-ton gantry cranes. The Alliance Machine Co. will furnish a 275-ton crane and 5,000,000 lb. of steel castings for the new 52-in. H beam mill of the Carnegie Steel Co. at Homestead, Pa.

## New York

New York, May 11.

INDICATIONS are that the largest machinery inquiry in this market, that of the Brooklyn-Manhattan Transit Co. for about 50 machine tools, 24 overhead electric cranes and two transfer tables, will be closed at an early date, as bidders have been requested to have their figures in by May 19. The equipment is for the new subway repair shops at Coney Island. Another large crane inquiry is from the New York Central Railroad, which is asking bids on three 20-ton gantry cranes. Machine tool business is somewhat quieter, but there is no serious slump. Among the orders placed with Eastern companies may be mentioned the following: A 96-in. x 72-in. x 18-ft. planer for a Pittsburgh company; two 42-in. x 18-ft. engine lathes for a locomotive builder; a thread milling machine for an elevator manufacturer; a bench lathe, bench milling machine and a drilling machine for a gas and electric plant; a 13-in. geared-head lathe for the Essex County vocational schools, New Jersey; a jig boring machine and a centering machine for an electric manufacturer; three hand milling machines for a motor parts manufacturer in Minnesota; two automatic milling machines for an electrical company in Chicago; an automatic milling machine for a lock manufacturer in Rockford, Ill.; geared head lathes to automobile manufacturers in Detroit and Milwaukee; a Kenosha, Wis., plant bought a vertical shaper, and two hand milling machines were sold to a manufacturer at East Milton, Mass.

The Schatz Mfg. Co., West Poughkeepsie, N. Y., manufacturer of punching and shearing machinery, etc., has awarded a general contract without competition to the Fred T. Ley Co., Springfield, Mass., for a one-story addition, 100 x 130 ft., to cost about \$60,000. Smith & Annable, 121 Lyman Street, Springfield, are architects. H. A. Schatz is president.

The Ohmer Fare Register Co., Dayton, Ohio, manufacturer of taximeters, etc., has leased the building at 146-50 West Sixty-third Street, New York, 75 x 100 ft., for a factory branch and distributing plant.

The New York Steam Co., 280 Madison Avenue, New York, is said to have preliminary plans under way for a new steam power house on East Thirty-fifth Street, one and two-stories, 150 x 150 ft., and 50 x 150 ft., to cost in excess of \$400,000 with equipment. The company has recently disposed of a bond issue of \$2,500,000, to be used in part for expansion. James D. Hurd is president.

The State Hospital Commission, Albany, N. Y., is asking bids until May 26, for two electric generators, air compressor and auxiliary equipment for the power plant at the Kings Park State Hospital. Plans at the office of the State Department of Architecture, Capitol Building, Albany, and Flatiron Building, New York.

Dwight P. Robinson & Co., Inc., 125 East Forty-sixth Street, New York, engineer and contractor, has secured a contract from the Atlantic Coast Line Railroad Co., Wilmington, N. C., for a new locomotive repair shop and other car shops at Uceta, near Tampa, Fla., to cost \$900,000 with machinery.

Charles M. and Norman C. Levy, 90 William Street, New York, manufacturing jewelers, have leased a portion of the building at 38-40 West Forty-eighth Street, for a new plant and will install equipment at an early date.

The Signal Corps, Procurement District, Governors Island, N. Y., is asking bids until May 20 for 110 reel carts and 660 steel spools.

The Rockland Light & Power Co., Nyack, N. Y., has secured permission to consolidate with the Orange County Public Service Corporation and the Catskill Power Corporation, operating in the same district. Extensions and improvements are planned in power plants and system, including transmission line construction.

The Board of Education, Lake George, N. Y., is considering the installation of manual training equipment in its proposed two-story high and grade school on West Main Street, estimated to cost \$200,000, for which bids are being asked on general contract. Edward S. Hewitt, 597 Fifth Avenue, New York, is architect.

The Goodyear Tire & Rubber Co., Akron, Ohio, has arranged for the erection of a new factory branch and distributing plant, 35 x 100 ft., at Jamaica, L. I., to cost approximately \$150,000. It is expected to be ready for occupancy in August.

The Rapid Addressing Machine Co., 46 West Twenty-third Street, New York, has awarded a general contract to Barclay White & Co., 1713 Sansom Street, Philadelphia, for its proposed one-story plant, 178 x 320 ft., at Roselle, N. J., to cost about \$175,000 with equipment. The Ballinger

Co., New York and Philadelphia, is architect. T. D. Adams is president.

Fire, May 7, destroyed a portion of the main plant of the American Standard Railway Fuse Co., Boonton, N. J., with loss reported at close to \$125,000 including machinery, the latter representing close to \$50,000 of aggregate.

E. I. du Pont de Nemours & Co., Wilmington, Del., has plans under way for an addition to its blasting cap works near Ringwood Avenue, Pompton Lakes, N. J., reported to cost approximately \$250,000 with equipment. The company purposes to dispose of its fuse plant on adjoining site. The plant of the company at Haskell, in this same district, is now being demolished. H. M. Pierce, Wilmington, company engineer, will be in charge of the new plant construction.

Fire, May 5, destroyed a portion of the plant of the Morris Mfg. Co., 7 Grant Street, Newark, N. J., manufacturer of caskets, etc., with loss reported at \$60,000. It is planned to rebuild. Howard K. Morris is head.

The A. Janitschek Foundry, 59 Lake Street, Jersey City, N. J., is preparing plans for a two-story addition to its foundry, 50 x 110 ft., to cost approximately \$27,000. Dietrich Wortman, 116 Lexington Avenue, New York, is architect.

The Board of Education, City Hall, Newark, N. J., is considering plans for a proposed manual training and vocational school in the vicinity of the public library, to be known as the Fawcett School of Industrial Arts, estimated to cost upward of \$700,000 with equipment. It is also proposed to install manual training shops in the proposed new junior high school at Bragaw Avenue and Wainwright Street, estimated to cost \$400,000.

The Tannin Corporation, Brooklyn, manufacturer of tanning extracts, will shortly commence the erection of a new plant at Wilmington, Del.

The Maher Turbine Corporation, 157 East Eighteenth Street, New York, has been incorporated with capital stock of 100,000 shares of the par value of \$1 each and will engage in the manufacture of turbines. Temporarily the company's work will be done on contract, but it contemplates building its own plant in the near future. P. J. Maher is president.

B. L. Nicholes & Co., 276 Water Street, New York, has been organized to build printing machinery, particularly the Nicco duster, a contrivance used in embossing work. The company is in production in its own plant in a small way and is in the market for materials. Most of the parts will be done in other shops on contract.

The Continental Refrigerating Machine Co., 173 Lafayette Street, New York, has been organized and is manufacturing refrigerating machines with capacity from  $\frac{1}{4}$  ton up to 5 tons, and is also developing a household type machine of similar construction. The company's plant is located at Campgaw, N. J. It is in the market for electric motors, castings, sheet steel, pipe coils and machinery for manufacturing its products.

The De Bothezat Impeller Co., Inc., whose plant is at 1922 Park Avenue, New York, has been organized to manufacture ventilating devices, including fans and air filters invented by Dr. George de Bothezat, a Russian scientist who came to the United States at the invitation of the United States Government for the purpose of building a helicopter which Dr. De Bothezat invented. The company also is manufacturing automobile fans.

## Philadelphia

PHILADELPHIA, May 10.

REVISED plans are in progress for the proposed addition to the plant of the Steel Heddle Mfg. Co., Twenty-first Street and Allegheny Avenue, Philadelphia, manufacturer of textile equipment, consisting of a one and five-story basement structure, 50 x 210 ft., with wing, 65 x 85 ft. Clarence E. Wunder, 1520 Locust Street, is architect.

The Department of City Transit, 1211 Chestnut Street, Philadelphia, H. E. Ehlers, director, is asking bids until May 21 for splice bars, bolts, nut locks, rails, and screw spikes for the Broad Street subway.

The Charles Eneu Johnson Co., Tenth and Lombard Streets, Philadelphia, manufacturer of printing inks, is completing plans for a one and three-story and basement factory, 60 x 95 ft., to cost \$100,000 with equipment. E. G. Perrot, 1211 Arch Street, is architect.

The Philadelphia Sign Co., 338 North Randolph Street, Philadelphia, manufacturer of electric signs and displays, has acquired the factory at 305-9 Brown Street, totaling 15,000 sq. ft. of floor space for a new plant.

Irwin T. Catherine, Franklin Trust Building, Philadelphia, architect, has plans under way for a five-story automobile service, repair and garage building, 100 x 100 ft., at 924 Spring Street, to cost \$180,000.

The new company to occupy property at Bristol, Pa., recently acquired by Herbert J. Maroney, Franklin Trust Building, Philadelphia, operating a zinc and metal business, will be known as the Superior Zinc Corporation, of which Mr. Maroney will be head. The company has a 7-acre site, improved with five buildings, and purposes to establish a foundry and smelting works. The property was formerly a part of the Harriman shipyard.

C. Schmidt & Sons, Inc., 127 Edward Street, Philadelphia, will install elevating, conveying and other handling equipment in the addition to its beverage bottling plant to cost \$100,000. Plans have been filed.

The Link Belt Co., Park Avenue, Nicetown, Philadelphia, manufacturer of conveying machinery, etc., will begin the construction of a one-story addition to its machine shop, 45 x 145 ft.

The City Water Department, Trenton, N. J., is securing an appropriation of about \$50,000 for the installation of a new 3,000,000-gal. pumping unit, with auxiliary equipment, at the service station on Pennington Avenue. It is understood that purchase will be made at an early date.

The Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, has plans for a two-story and basement power substation, 50 x 110 ft., to cost about \$100,000 with equipment. John T. Windrim, Commonwealth Building, is architect.

John Meigs, 1001 Chestnut Street, Philadelphia, architect and engineer, has plans nearing completion for a four-story automobile service, repair and garage building, 90 x 175 ft., in the Germantown district, to cost \$190,000 with equipment.

The Board of Education, Willow Grove, Pa., is considering the installation of manual training equipment in its proposed two-story basement high school to cost \$125,000, for which plans have been drawn by T. Frank Miller, 1012 Walnut Street, Philadelphia, architect.

The Reading Foundry & Supply Co., Reading, Pa., has begun the erection of a new two-story plant, 60 x 117 ft., at Pottsville, Pa., to cost about \$75,000 with equipment.

Charles Lehnert, Catasauqua, Pa., is planning to rebuild his one-story automobile service, repair and garage building at Coplay, Pa., recently destroyed by fire. The new structure will be larger than the former building to allow additional space for repair shop and parts department. Frank Elisele, manager of the former works, will be in charge.

The Board of Education, Bangor, Pa., is considering the installation of manual training equipment in the new two-story high school, estimated to cost \$200,000, for which foundations will soon be laid.

The Philadelphia & Reading Railway, Reading Terminal, Philadelphia, is arranging for the early completion of its shop expansion program at Reading, Pa., representing an investment of more than \$2,500,000, and purposes to centralize its locomotive and car repair shops at this place. Additional equipment will be installed and substantial additions made to the working force.

Fire, May 2, destroyed the coal washery of the Hillside Coal & Iron Co., North Avoca, near Wilkes-Barre, Pa., with loss reported at \$75,000 including equipment. Plans are under way for early rebuilding. The company is a subsidiary of the Erie Railroad Co., and maintains headquarters at Smith and Mill Streets, Dunmore, Pa.

The Bear Gap Water Co., Mount Carmel, Pa., is said to be planning the installation of pumping equipment in connection with proposed extensions and improvements in its plant and system to cost about \$125,000.

The Metropolitan Edison Co., Reading, Pa., is arranging for a new bond issue of \$1,000,000, a portion of the fund to be used for extensions and improvements in plants and system, including transmission line construction.

The Williamsport-Bulck Co., 405 West Third Street, Williamsport, Pa., is asking bids on general contract for a three-story and basement service, repair and garage building to cost \$140,000 with equipment.

The International Harvester Co., 608 South Michigan Avenue, Chicago, will proceed with the erection of its proposed factory branch and distributing plant, one story, 100 x 330 ft., at Harrisburg, Pa., to cost about \$75,000.

The Fow Mfg. & Supply Co., Inc., Philadelphia, has been organized with capital of \$75,000 to manufacture heating specialties. It succeeds to the Fow Mfg. Co. and is occupying that company's building at Water and Mifflin Streets, Philadelphia.

The Anthracite Machinery Co., Inc., Sanderson Avenue and Glenn Street, Scranton, Pa., has been incorporated with capital stock of \$25,000. No manufacturing program has been planned and the company will confine its activities for the present to the distribution of various types of mining equipment. H. V. Sturtevant is president.



## The Crane Market

FEW new inquiries for overhead or locomotive cranes have appeared recently, but there is a large accumulation of pending business that should make the market fairly active during the coming few weeks. The Phoenix Utility Co., 71 Broadway, New York, which has had a 100-ton and a 150-ton gantry crane pending for some time has added a 60-ton, 1-motor, overhead crane to its list. The New York Edison Co. has been taking bids on a 5-ton, 13-ft. 4-in. span, 3-motor overhead crane for the East Fourteenth Street station. Other business in the market includes the 24 cranes of 3-ton, 5-ton, 7½-ton, 10-ton, 15-ton and 30-ton capacities for the New York Rapid Transit Co., 85 Clinton Street, Brooklyn, N. Y.; a 20-ton hand power crane for the Standard Oil Co., New York and a 5-ton hand power crane for the Public Service Production Co., Newark, N. J. W. R. Grace & Co., Hanover Square, New York, are asking for prices on a bucket handling crane for Santiago, Chile, 60-ft. span, 30-ft. lift, to handle a 4-cu. yd. bucket. The New York Central Railroad, in addition to inquiries for 20-ton gantry cranes for Rochester and Kingsbridge Station, New York, has asked for a 20-ton gantry crane for Port Morris station.

Among recent purchases are:

W. Horace Williams, New Orleans, a standard crawl-tread locomotive crane from the American Hoist & Derrick Co.

John W. Cowper Co., Buffalo, N. Y., a 25-ton locomotive crane from the American Hoist & Derrick Co.

Brooklyn, Eastern District Terminal Co., Brooklyn, N. Y., a 20-ton locomotive crane from the Browning Crane Co.

Frazer-Brace Engineering Co., Ltd., Montreal, two 20-ton used Brownhoist locomotive cranes from Philip T. King, New York.

Southern Pacific Railway Co., a 25-ton locomotive crane from the American Hoist & Derrick Co.

Westinghouse Electric & Mfg. Co., Sharon, Pa., a 75-ton, 60-ft. span overhead crane with 20-ton auxiliary, from the Morgan Engineering Co.

Carnegie Steel Co., Homestead, Pa., a 275-ton, 85-ft. span crane for new 52-in. H-beam mill, from the Alliance Machine Co.

The Baldwin Locomotive Works will build a new pattern shop at Eddystone, Pa., with floor space of 50,000 sq. ft. A large building at Eddystone formerly used by the Remington Arms Co. will be converted into a boiler shop.

The J. & G. Rich Co., 120 North Sixth Street, Philadelphia, is in the market for a 3-in. Gleason generator.

## South Atlantic States

BALTIMORE, May 10.

CONTRACT has been let by the Brandt Cabinet Works, Pennsylvania Avenue, Hagerstown, Md., to the J. B. Ferguson Co., 43 North Jonathan Street, for a two-story addition, 60 x 100 ft., to cost about \$60,000 with equipment. Carl Brandt is president.

The Ajax Cement Block Co., National Highway, Cumberland, Md., is said to be planning for extensions in other lines of production and purposes to build a one-story foundry for the production of brass, aluminum and other castings, to cost about \$30,000. H. D. Alresman is general manager and will be in charge of equipment purchases.

Montgomery Ward & Co., Chicago Avenue and Larrabee Street, Chicago, mail order distributors, have authorized the construction of a six-story unit to their eight-story branch plant and distributing warehouse at Baltimore. The new structure will approximate 466,000 sq. ft., and is estimated to cost close to \$1,000,000 with equipment. Charles E. McCoy is general manager.

A vocational department will be installed in the McKinley technical high school to be erected at Washington, estimated to cost about \$850,000, for which bids are being asked on general contract by the Board of District Commissioners, District Building, until June 2.

The Common Council, Shelby, N. C., has preliminary plans under way for a new pumping station for the municipal waterworks, with capacity of about 6,000,000 gal. per day, to cost about \$150,000 with pumps and auxiliary machinery.

The Ramsey Furniture Co., Inc., Bassett, Va., will build a new one-story plant, 100 x 500 ft., with extension, 150 x 200 ft., to cost \$125,000. About \$75,000 will be expended for machinery installation, to be purchased at an early date. E. T. Ramsey is president.

The Tredegar Co., Richmond, Va., manufacturer of iron and steel castings, etc., will rebuild the portion of its plant recently destroyed by fire, with loss reported at \$40,000 including equipment.

Thomas R. Harrison, route 4, Leesburg, Va., is desirous of getting in touch with manufacturers of hydraulic rams for forcing water from medium flow springs for residence service.

The Board of Awards, office of the city register, City Hall, Baltimore, is asking bids until May 19 for electrical equipment for the power department at the Hillen pumping station. Plans and specifications at the office of V. Bernard Sloma, water engineer, room 205, City Hall.

R. P. Johnson, Wytheville, Va., machinery dealer, has been making inquiries for an 80-hp. stationary engine; a 100-hp. horizontal return tubular boiler to operate at 100 lb. working pressure, and for a 10-ton, double cylinder steam road roller.

The Virginia Electric & Power Co., Richmond, Va., has taken over the steam-operated electric power plant of the

Hart & Fountain Cotton Mills, Tarboro, N. C., and will continue operation as an auxiliary source of power. Extensions and betterments are planned, including the installation of additional equipment. The company will also build a new power transmission line between Roanoke Rapids and Tarboro.

The Michelin Tire Co., Millville, N. J., is said to be planning to rebuild the portion of its branch factory at Charlotte, N. C., destroyed by fire April 29, with loss reported at \$50,000 including equipment.

The Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, is completing plans for a new four-story equipment storage and distributing building, with repair department, to be 156 x 185 ft., estimated to cost \$265,000 with equipment.

The Marion Handle Co., Marion, Va., has preliminary plans for the establishment of a new factory to cost \$25,000 with equipment. Frank Copenhagen is head.

The Motor Ramp Garage Co., Baltimore, care of F. N. Iglehart & Co., 11 East Lexington Street, has filed plans for its proposed six-story service, repair and garage building, estimated to cost \$300,000 with equipment.

The Brumby Chair Co., Marietta, Ga., is planning to rebuild the portion of its factory destroyed by fire April 20, with loss reported at \$100,000 including machinery. A large part of the damage was sustained by the finishing department.

The Town Council, Orange, Va., is asking bids until May 17 for equipment for a municipal pumping plant, including electrically-operated pumping units, low and high service, respectively, with complete auxiliaries. The Ambler Engineering Co., Richmond, Va., is engineer.

The Carolina Power & Light Co., Raleigh, N. C., is reported to be planning the construction of a hydroelectric generating plant at Pee Dee, Anson County, to cost in excess of \$1,500,000 with transmission system.

The Hiddenite Crushed Stone Co., Inc., Hiddenite, N. C., has been inquiring for a 100-hp. vertical fuel oil engine, with accessories; also for a stone crusher, with capacity of 100 tons per hr. spaced to retain 2½-in. material, and for a secondary stone crusher with output of 60 tons per hr.

The United States Rubber Co., Akron, Ohio, has leased a building at Barre and Charles Streets, Baltimore, for a new factory branch and distributing plant. Extensions and improvements will be made to cost about \$50,000. Local offices are at 325 West Lombard Street.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has been making inquiries for two vertically inclined presses; also for a bucket elevator, 30-ft. centers, with 4 to 6-in. buckets.

The William Knabe & Co. division of the American Plano Co., Eutaw and West Streets, Baltimore, have engaged Parker, Thomas & Rice, Union Trust Building, architects, to prepare plans for their proposed six-story addition, 80 x 80 ft., to cost \$100,000 with equipment.

The Board of Town Commissioners, Mount Gilead, N. C., is asking bids until May 17 for a steel water tank of 100,000 gal. capacity, on 100 ft. steel tower; plans to accompany proposal. L. V. Edwards, Winston-Salem, N. C., is engineer.

The Board of Aldermen, Edenton, N. C., is taking bids until May 20 for one 250,000 gal. steel water tank on 100 ft. tower. R. E. Leary is city clerk.

The firm of Hardy & Newsom, La Grange, N. C., has sold out its holding to Hardy & Newsom, Inc. The authorized capitalization is \$250,000, with \$120,300 paid up. The company manufactures bean harvesters, tobacco trucks and various kinds of farm implements and is also engaged in the manufacture of castings on contract. L. R. Britt is secretary and treasurer.

The Frederick Iron & Steel Co., Frederick, Md., is inquiring for a used 24 to 30-in. swing engine lathe, 15 to 18 ft. between centers, preferably geared head, single pulley drive; also for a ring-wheel horizontal spindle disk grinder.

The Mallory Machinery Corporation, Baltimore, is in the market for about 10,000 sq. ft., 3 column, 34, 36, or 38-in. high steam radiation; also for a vacuum steam pump to take care of 16,000 sq. ft. of radiation.

## Gulf States

BIRMINGHAM, May 10.

PLANS are being considered by the Birmingham Aluminum Novelty Co., 3916 Thirty-fourth Street, Birmingham, for a new one-story plant, 50 x 125 ft., for the manufacture of cooking utensils and other cast aluminum products. The installation will include foundry equipment, stamping machinery, buffing machinery, etc. David McCarty is president.

The Commonwealth Utilities Co., St. Louis, has acquired the plant of the Pascagoula Ice Co., Pascagoula, Miss., and contemplates extensions and the installation of additional ice-making machinery, to cost \$100,000.

The Common Council, Welsh, La., has plans under way for a municipal electric light and power house for which bids will soon be asked.

The San Antonio Machine & Supply Co., 102 South Chaparral Street, San Antonio, Tex., has awarded a general contract to J. W. Birmingham, 723 King Street, for a new one-story plant, 50 x 300 ft., to cost \$50,000 with equipment.

The West Coast Brick Co., 124 Central Avenue, Sarasota, Fla., is planning the purchase of a 150-hp. stationary engine, two 150-hp. horizontal return tubular boilers and auxiliary equipment, for service at its proposed local plant.

The McColgan-Kramer Co., McComb, Miss., is contemplating the construction of a new cold storage and refrigerating plant at Hammond, La., to cost close to \$75,000, with equipment.

The Solar Water Heater Co., Tampa, Fla., H. C. Nellsberg, manager, has acquired a local site and is considering plans for a new factory for the manufacture of water heaters and parts.

The Florida Public Service Co., DeLand, Fla., is disposing of a new bond issue of \$1,766,000, a portion of the proceeds to be used for extensions and improvements in power plants and transmission system. The company is operated by the W. S. Barstow Management Association, Inc., 50 Pine Street, New York. W. S. Barstow is president.

Tentative plans are said to be under advisement by the Corinth Brick Co., Corinth, Miss., for rebuilding the portion of its plant recently destroyed by fire, with loss estimated at \$100,000 including equipment.

The American Steel Co. of Florida, Inc., Jacksonville, Fla., a subsidiary of the American Steel Export Co., 233 Broadway, New York, has acquired property at 304 West Church Street, for a local storage and distributing works. It will establish a main plant at the Jacksonville Municipal docks. Harry I. Davis is president.

The General Public Utilities Co., operated under the direction of Day & Zimmerman, Inc., Sixteenth and Walnut Streets, Philadelphia, will take over and expand the Southwestern Public Service Co., Gulf Public Service Co., General Public Utilities Co., Consolidated Power & Light Co. of South Dakota, the Dakota Power Co., and other utilities. Plans are under way for extensions, including the construction of an addition to the steam-operated electric power plant at Amarillo, Tex.; addition to generating station at Carlsbad, N. M.; addition to power plant at Flagstaff, Ariz.; installation of new generating unit and auxiliary equipment in the power station at Eunice, La.; construction of new ice-manufacturing plant at Jacksonville, Tex., work on which has been started; completion of additions to ice-manufacturing plants at West Palm Beach, Miami, Miami Beach and Homestead, Fla.; and extensive additions in transmission lines in different districts noted. A bond issue of \$6,300,000 is being sold, a portion of the fund to be used for the expansion. F. W. Woodcock is president.

The Packard-Scruggs Co., North Harwood and San Jacinto Streets, Dallas, Tex., local representative for the Packard automobile, has acquired the four-story and basement building, 114 x 164 ft., at Olive Street and Pacific Avenue, for \$165,000 and will remodel for a new service, repair and garage building. Gross R. Scruggs heads the company.

The proposed new plant of the King Mfg. Co., 230 South Clark Street, Chicago, manufacturer of cast iron lighting standards, etc., will be located at Sheffield, Ala., instead of St. Louis, as recently reported. Work will soon begin on a one-story foundry, 140 x 480 ft., and two-story office building, 25 x 40 ft., to cost about \$100,000. C. P. Norris, 1220 South Eleventh Street, St. Joseph, Mo., is general contractor.

The Mississippi Ice & Utilities Co., Gulfport, Miss., has taken over the properties of the Gulfport Ice Co., recently acquired. Preliminary plans are under advisement for extensions and improvements to cost approximately \$200,000, including the installation of additional equipment.

The City Council, Amarillo, Tex., plans the installation of two new pumping plants in connection with extensions and betterments in the municipal waterworks. The entire project will cost about \$850,000.

The Southern Dusting Co., Inc., Tallulah, La., Eugene Stevens, manager, is considering plans for the establishment of a one-story factory for rebuilding and repairing aircraft. It is purposed to purchase several machine tools and other equipment at an early date, including lathe, drill press, welding equipment, etc.

The Claiborne Parish School Board, Homer, La., is considering the installation of manual training equipment in a proposed new high school estimated to cost \$175,000. Edward F. Neild, Merchants' Building, Shreveport, La., is architect.

The City Council, Sarasota, Fla., plans the installation of electrically-driven pumping machinery in connection with proposed extensions in waterworks, with installation of steam power plant for auxiliary and emergency service. Bids will soon be asked.

The Dubus Pump & Machinery Co., 628 Tchoupitoulas Street, New Orleans, has been organized to manufacture pump equipment and parts. The company will put on the market in about 90 days its first pump, which will be for the handling of heavy and viscous liquids, such as black strap molasses and heavy crude oils. At present it does not contemplate building a plant but is having the pumps built on contract. P. A. Dubus is president.

The C. C. Elmer Tank & Boiler Works, 700 South Alexander Street, New Orleans, has purchased a four-acre site, just outside the city limits and is erecting a new steel shop, 110 x 200 ft., into which its equipment will be moved about June 1.

## Buffalo

BUFFALO, May 10.

THE International Cooperage Co., Sugar Street, Niagara Falls, N. Y., is said to be arranging for the early erection of a new branch plant at Tillsonburg, Ont., to cost \$60,000 with equipment.

The Binghamton Gas Works, Chenango Street, Binghamton, N. Y., is completing plans for a new mechanical repair and service building, two stories, 62 x 145 ft., to cost about \$50,000 with equipment. A portion of the structure will be used for office service. Conrad & Cummings, Phelps Building, are architects. Charles E. Bennett is general manager.

The Willys-Overland Co., Toledo, Ohio, is reported to be planning for extensions in its parts plant at Elmira, N. Y., including the installation of additional machinery, estimated to cost \$1,000,000.

The Spencer Lens Co., 442 Niagara Street, Buffalo, manufacturer of optical instruments, etc., has filed plans for a one-story addition to its new plant on Doat Street, where operations will be concentrated. Louis M. Potter is vice-president.

The Utica Gas & Electric Co., Utica, N. Y., is disposing of a bond issue of \$6,000,000, a portion of the proceeds to be used for extensions and improvements in plants and system. The company was acquired recently by the Mohawk Hudson Power Corporation to be consolidated with a number of other electric utilities in this section. F. B. Steele is first vice-president.

Fire, May 6, destroyed a portion of the grinding mill and plant of the Dominion Feldspar Corporation, Rochester, N. Y., with loss reported at \$80,000 including equipment.

The Board of Contract & Supply, Syracuse, N. Y., has preliminary plans under advisement for a one-story municipal automobile service, repair and garage building at South Beech and East Water Streets, to cost \$50,000 with equipment. Nelson F. Pitts, City Hall, is city engineer.

The General Electric Co., Schenectady, N. Y., has awarded contract to the H. K. Ferguson Co., Cleveland, for a one-story addition, 122 x 184 ft. to its Buffalo plant, to cost \$100,000. Construction will begin at once and the building



is expected to be completed within 70 days. Equipment will include one 4-ton and one 10-ton crane.

The Salamanca Foundry & Machine Co., Salamanca, N. Y., has been reorganized with a capital stock of \$125,000 and has changed its name to the Luminite Products Co. Work will begin at once on the erection of a two-story factory adjoining its plant for the manufacture of routing machines, in addition to its regular line of products. John Walrath is president and treasurer of the company; Paul E. Luther, vice-president, and W. M. Greene, secretary.

The Lidoen Mfg. Corporation, Batavia, N. Y., has been incorporated to manufacture sheet metal specialties, particularly roof ventilators. The company now has a small plant in operation and is interested in receiving catalogs from manufacturers of machine tools and sheet metal working equipment. C. H. Lighthart is president.

## New England

Boston, May 10.

**F**OLLOWING a brief spurt in machinery sales, early last week, the market became unusually quiet. Orders were mostly for small tools which, despite the stillness of the market, are holding up well.

The Stamford Gas & Electric Co., 11 Bank Street, Stamford, Conn., has taken out a permit to build a new coal-gas manufacturing plant to cost \$177,000, including gas holder.

The Archer-Strauss Rubber Co., Framingham, Mass., is arranging for the early establishment of a branch plant in a factory on North Main Street, Natick, Mass.

The New York, New Haven & Hartford Railroad Co., New Haven, Conn., has asked bids on a general contract for a one-story locomotive repair shop at Readville, Boston, reported to cost in excess of \$70,000 with equipment.

Monks & Johnson, 99 Chauncy Street, Boston, architects and engineers, have completed plans for a two-story automobile service, repair and garage building, 120 x 160 ft., on Chapel Street, Bridgeport, Conn., to cost about \$75,000 with equipment.

The Clifton Mfg. Co., 65 Brookside Avenue, Jamaica Plain, Boston, manufacturer of rubber goods, has filed plans for a one-story addition to cost about \$14,000, exclusive of equipment.

The Graybar Electric Co., operated by the Westinghouse Electric & Mfg. Co., 150 Broadway, New York, has leased a new factory to be erected at 51 Chapel Street, New Haven, Conn., for the manufacture and distribution of electrical supplies. Storrs & Feinberg, 1127 Main Street, Hartford, Conn., are architects.

The New Britain Gas Light Co., New Britain, Conn., will soon begin the construction of a one-story steam power house, 35 x 46 ft., with boiler units, pumping equipment and auxiliaries. Max J. Unkelbach, New Britain, is architect.

The Agar Mfg. Corporation, Medford, Mass., manufacturer of corrugated paper boxes and containers, has acquired property at Somerville, Mass., totaling 138,000 sq. ft. as a site for a new plant, to cost about \$200,000 with machinery.

The Board of Contract and Supply, Municipal Building, Hartford, Conn., will receive bids until May 18 for 11,000 ft. No. 7 wire cable, and 7000 ft. No. 10 wire cable. C. DeLancey Alton, Jr., is secretary.

The American Metal Co., 61 Broadway, New York, has leased copper properties at South Strafford, Vt. The existing mill will be rebuilt and new machinery installed. It is expected to have the plant ready for service during the summer.

The Union Drawn Steel Co., 775 Capitol Avenue, Hartford, Conn., has taken out a permit for extensions and improvements in its plant to cost about \$14,000.

George A. Hill, East St. Johnsbury, Vt., has plans under consideration for the rebuilding of the portion of his bobbin manufacturing factory destroyed by fire May 1, with loss reported at \$15,000 including equipment.

The Crown Sheet Metal Works, Inc., 186 Bank Street, New London, Conn., has taken bids on a general contract for a two-story addition, 50 x 100 ft., to cost about \$40,000 including equipment.

A manual training department has been authorized in the basement of the addition to the Columbia school, Waterbury, Conn., by the Board of Education. The extension will be two-stories, to cost in excess of \$125,000. Louis A. Walsh, Waterbury, is architect.

The Oxweld Railroad Service Co., New Haven, Conn., will proceed with the erection of a one-story welding shop, 17 x 55 ft., on Union Avenue. F. C. Hasse, New Haven, is architect.

The Hartford Foundry Co., Wethersfield, Conn., has been incorporated with capital stock of \$50,000 and will specialize in light gray iron castings. The company has leased a building formerly used by the National Machine Co. at Wethersfield. Necessary equipment for the foundry is being purchased. Edgar B. Spencer is president and treasurer; Perry R. Spencer, vice-president and William H. Walther, secretary.

## Cincinnati

CINCINNATI, May 10.

**M**ACHINE tool buying showed a further decline the past week. While local builders have a large number of outstanding quotations, some difficulty is experienced in converting inquiries into orders. Three companies in the Detroit territory purchased tools, but the total volume of business from that district was small. The Carolina, Clinchfield & Ohio Railway, Johnson City, Tenn., is reported to be in the market for four gap lathes. Otherwise, new railroad developments have been negligible. With neither automobile makers nor railroads actively buying equipment, machine tool manufacturers find the general industrial field the most fertile source of orders. Purchases have been confined principally to single machines.

The flooding of the market with used machinery is a disturbing factor to local builders. Approximately 1000 tools will be offered at auction in the next 10 days by three companies in the East and Middle West. It is believed that the disposal of such a large number of machines will have a weakening effect.

The Chicago, Rock Island & Pacific purchased a 36-in. x 12-ft. planer from the Niles-Bement-Pond Co. The latter also received an order for a 96-in. x 18-ft. planer from the Blaw-Knox Co., Pittsburgh. A Detroit automobile company bought three 15-in. lathes. The Liberty Machine Tool Co., Hamilton, Ohio, booked three planers for shipment to the Detroit territory. The Pittsburgh Steel Products Co., Pittsburgh, has taken three No. 131 Ransom grinders, and the Textile Machinery Co., Reading, Pa., bought a Ransom machine. The American Can Co., Cincinnati, purchased a jig borer. The Robbins & Myers Co., Springfield, Ohio, is the buyer of a milling machine, and the Warner Gear Co., Muncie, Ind., purchased a duplex hand centering machine.

The Kant-Skore Piston Co., Spring Grove Avenue and Garrard Street, Cincinnati, manufacturer of aluminum pistons, has purchased 11 buildings and considerable property on Beekman Street from the Lunkenheimer Co. The two largest structures are a four-story concrete factory and a one-story monitor-type foundry. After making improvements the company will move to the new location where it will have approximately 125,000 sq. ft. of floor space. John Eckerle is president.

The Springfield Malleable Iron Co., Springfield, Ohio, has plans for the construction of two buildings to replace those recently destroyed by fire. One will be 40 x 126-ft., and the other 73 x 100-ft. T. W. Ludlow is president.

John W. Dietz, Dayton, Ohio, will erect a one-story factory 80 x 140-ft., at 718 Webster Street, to manufacture novelty airplanes.

The Aluminum Foundry & Mfg. Co., Chattanooga, Tenn., has been incorporated with capital stock of \$10,000 which possibly will be increased shortly to \$20,000, and is engaged in the manufacture of various products of aluminum.

The Schaible Foundry & Brass Works, Inc., Dane and Knowlton Streets, Cincinnati, is said to be selecting a site for an addition to cost approximately \$25,000. Charles Schaible is head.

The Superior Casting Co., South Perry Street, Dayton, Ohio, has taken out a permit for a one-story addition to its foundry.

The Grasselli Chemical Co., Guardian Building, Cleveland, will soon have plans drawn for a new sulphuric acid manufacturing plant on property recently acquired near Wurland, Ky., reported to cost in excess of \$500,000 with equipment. This will be the first unit of a large plant. W. T. Cashman is assistant secretary.

Mast Foss & Co., Main Street, Springfield, Ohio, manufacturers of pumping machinery, lawn mowers, etc., have awarded contracts to T. A. Graham and the Bellefontaine Bridge & Iron Co., for a new one-story plant, 100 x 210 ft., to cost \$50,000. It will replace a works destroyed by fire last December.

Bids will soon be asked for electrical equipment and steam power apparatus for a power plant at the proposed textile mill of the Holliston Mills of Tennessee, Inc., Kings-

port, Tenn., affiliated with the Holliston Mills, Norwood, Mass. The entire plant will cost in excess of \$350,000. Charles E. Leonard, Kingsport, is engineer.

The Tri-State Cement Products Co., Knoxville, Tenn., is said to be concluding arrangements for the purchase of the plant and business of the Cumberland Gap Concrete Pipe Co., Cumberland Gap, Tenn. Extensions and improvements are contemplated at the plant, which will be arranged to manufacture concrete pipe up to 72 in. diameter.

The Ohio Edison Co., Springfield, Ohio, is completing plans for the construction of its proposed steam-operated electric power plant on the Mad River, west of the city, reported to cost in excess of \$1,500,000 with transmission system. Shilling & Eastman, Springfield, are architects.

The Delco Light Co., Dayton, Ohio, manufacturer of automobile lighting and starting systems, is reported to have tentative plans under consideration for additions, to cost more than \$1,000,000 with machinery. E. G. Beichler, is president.

The Pittsburgh Steel Co., Union Trust Building, Pittsburgh, has leased a two-story building, 90 x 170 ft., to be erected on Front Street, Memphis, Tenn., for a new branch plant and distributing works. J. T. Wallace, Bank of Commerce Building, Memphis, is engineer.

The National Ford Dealers' Service Corporation, Falls Building, Memphis, Tenn., has completed plans for a two-story service, repair and garage building, 100 x 150 ft., with parts department, etc., to cost \$75,000 with equipment. Thomas Thompson, Central Bank Building, is architect.

The Board of Education, Bexley, Ohio, is considering the installation of manual training equipment in its proposed junior high and grade school, estimated to cost \$300,000. Miller & Reeves, 20 South Third Street, Columbus, Ohio, are architects.

The Kentucky Power Co., Brooksville, Ky., is said to be planning the construction of a new power house at Morehead, Ky., with initial capacity of 2000 kw. The company has recently acquired the Morehead municipal electric light and power station.

## Chicago

CHICAGO, May 10.

THE tendency of the machine tool market is to mark time, and dealers find that sales for the week are considerably below the average maintained throughout April. In general, outlying districts are now more active than in Chicago and the immediate vicinity. The dullness of the market is not reflected in inquiry, of which there is a good volume pending. Moreover, fresh requests for prices total fairly large.

Deliveries are gradually improving, and dealers' back orders are much smaller than during the first quarter. An Eastern manufacturer has advanced prices of its line of shapers about 15 per cent, and another builder has readjusted prices of cold saws.

The Ramapo Ajax Corporation, Chicago, has bought a 42-in. x 24-in. x 24-ft. Gray frog and switch planer. The Union Pacific is asking for prices on two 24-in. motor-driven floor grinders, an 18-in. motor-driven floor grinder, two motor-driven guide bar grinders, a 36-in. lathe, and a 42-in. lathe. The Rock Island is inquiring for a 48-in. x 48-in. x 12-ft. planer for Silvis, Ill., two 24-in. heavy-duty back geared lathes, 72-in. between centers, one for Dalhart, Tex., and one for Liberal, Kan., and a 36-in. upright drill for Liberal, Kan. The Rock Island tools are to be equipped with 440-volt 3-phase 60-cycle motors and push button control stations.

The Argo Iron & Metal Co., 1662 Elston Ave., Chicago, has awarded a general contract for a two-story and basement addition to cost \$100,000.

The General Metal Spinning Co., 12824 N. California Avenue, Chicago, will build a one-story factory, 40 x 100 ft., at 2643 Belmont Avenue, to cost \$90,000. B. J. Rappaport, 6709 Lakewood Avenue, is architect.

The Ke Haw Ke Mfg. Co., 419 Sixth Street, South, Minneapolis, Minn., manufacturer of tire equipment, will build a new factory, 82 x 130 ft., to cost \$75,000. The general contractor is the E. M. Ganley Construction Co.

The Central Portland Cement Co., 111 West Monroe Street, Chicago, is planning the construction of a new mill at LaSalle, Ill., to cost in excess of \$1,500,000.

The Jordan Machine Tool Co., 1854 East Twenty-eighth Street, Minneapolis, Minn., will build a factory addition, 65 x 103 ft.

The Traylor Vibrator Co., 1400-12 Delgany Street, Denver, Colo., has been organized with capital stock of \$500,000 to operate a general manufacturing business, specializing in electric vibrators. The Traylor Vibrator Co. has taken over the assets of the Flint Electric & Mfg. Co. of Denver. James R. Flint is vice-president.

The Chicago & North Western Railroad Co., 228 West Jackson Boulevard, Chicago, is reported to be planning the construction of a new engine house with shop facilities at Jewell, Iowa, to cost close to \$40,000.

The Board of City Commissioners, Madison, S. D., is asking bids until May 24 for the construction of an addition to the municipal electric light and power plant; also for a new pumping station for the city waterworks, to include two motor-driven centrifugal pumping units and auxiliaries. Plans at the office of J. W. Emberg, city auditor.

To carry out its proposed paper mill and hydroelectric power project at International Falls, Minn., the Minnesota & Ontario Paper Co., Builders' Exchange Building, Minneapolis, Minn., has arranged for a note issue of \$3,500,000, in addition to a recent bond issue of \$4,000,000. The mill will be equipped for a capacity of 500 tons per day, and the generating stations will have an output of 27,000 hp. The company is a subsidiary of the Backus-Brooks Co., same address. E. W. Backus is president of both organizations.

The City Commission, Williston, N. D., is considering the purchase of a steel water tank, 20,000 gal. capacity, and steel tower for the municipal water system. Harry Monroe is light and water commissioner in charge.

The Abingdon Sanitary Mfg. Co., Abingdon, Ill., has awarded a general contract to F. L. Borer, local, for three additions to its plant, one and two-stories, to cost close to \$100,000 with equipment.

The M. & N. Pattern Works, Inc., 448 North Halsted Street, Chicago, manufacturer of metal and wood patterns, has work in progress on a new plant, 50 x 110 ft., at 1461 West Grand Avenue, to cost \$40,000. The present plant will be removed to the new location and additional equipment installed. E. J. McLellan, Chicago, is architect.

James Morrows' Sons, 202 South Genesee Street, Waukegan, Ill., have asked bids on general contract for a two-story and basement automobile service, repair and garage building, 76 x 260 ft., to cost about \$175,000 with equipment.

The Magnus Metal Co., Denver, Colo., care of C. A. Bodman, 1221 Twelfth Street, will soon begin work on a one-story foundry, 200 x 200 ft., to cost \$85,000 with equipment.

The Bedford Independent School District, Bedford, Iowa, plans the installation of manual training equipment in its proposed two-story high school to cost \$165,000, for which bids will be asked on a general contract early in July. Keffer & Jones, Masonic Temple Building, Des Moines, Iowa, are architects.

The Iowa Valve Co., Oskaloosa, Iowa, has begun the erection of a new plant, 50 x 65 ft., and plans the early installation of equipment.

## Pittsburgh

PITTSBURGH, May 10.

THE majority of local machine tool dealers report sales of fairly good volume, but mostly in single tools. In heavy machinery the outstanding business of the past week was the auxiliary equipment for the new 52-in. H-beam mill of the Carnegie Steel Co. at Homestead. There are approximately 5,000,000 lb. of steel castings in tables, dragout mechanism, etc., to be furnished by the Alliance Machine Co., which also will build a 275-ton crane to serve the mill.

Contract has been let by the Enterprise Stamping Co., McKees Rocks, Pa., manufacturer of metal cans, stamped metal products, etc., to the Austin Co. for a three-story addition, to cost about \$150,000 with equipment. The larger part of the structure will be used for manufacturing and the remainder for storage and distributing.

The Parkersburg Corrugated Box Co., 1722 Avery Street, Parkersburg, W. Va., George McDonald, president, recently organized with a capital of \$150,000, has completed plans for a new factory to cost about \$55,000 with equipment.

The Tygart Valley Glass Co., Grafton, W. Va., manufacturer of bottles, jars, etc., is considering the early rebuilding of the portion of its plant destroyed by fire April 25, with loss reported in excess of \$85,000 including equipment.

The Owens Bottle Co., Kanawha, W. Va., has work under way on a two-story addition, 120 x 1000 ft., a portion of the structure to be equipped for the manufacture of corrugated boxes and cartons, etc. Headquarters are at Toledo, Ohio. W. E. Plummer is manager at Kanawha.



Fire, May 5, destroyed a portion of the plant of the Gloninger Brick Co., Vanport, Pa., with loss estimated at \$50,000 including equipment. Plans for rebuilding are under advisement.

The Gulf Refining Co., Frick Annex, Pittsburgh, is reported to be considering the construction of a new refinery in the vicinity of Amarillo, Tex., to cost more than \$400,000 with machinery.

The National Radiator Co., Johnstown, Pa., has awarded a general contract to the Austin Co., Cleveland, for a new plant at New Castle, Pa., to cost approximately \$350,000. A large portion of the initial works will be equipped as a foundry.

The Shannopin Coal Co., a subsidiary of the Jones & Laughlin Steel Corporation, Ross Street, Pittsburgh, is arranging for the immediate development of coal properties near Taylortown, Pa. It also plans the construction of a dock on the Monongahela River at Poland, Pa., with hoisting and other coal-handling machinery. A narrow-gauge railroad will be constructed from Taylortown to Poland, about 3 miles. A housing development for employees is also projected.

The Sharpless Solvents Corporation, Belle, W. Va., will soon begin the construction of a new plant, on site recently acquired, for the manufacture of industrial alcohol, etc., to cost about \$75,000 with equipment.

## Cleveland

CLEVELAND, May 10.

**M**ACHINE tool business in this section was quiet the past week, but sales were probably as large as during the previous few weeks. The volume of inquiry is better than sales, as it usually takes a long time for much of the prospective business to come to a head. Automobile plants in the Detroit territory are buying very little equipment at present. A Cleveland manufacturer of turret lathes reports the continuance of a fair demand for single machines, orders being well distributed among various iron working industries. A small list which was expected from the Nickel Plate railroad has been held up and will probably not be issued until August.

The Sawyer Gear & Mfg. Co., 5122 St. Clair Avenue, Cleveland, has taken bids for a two-story factory addition, 100 x 100 ft.

The Fairfield Engineering Co., Marion, Ohio, manufacturer of conveying and other machinery, will erect a one-story factory and office building.

The Studebaker Corporation of America will build a service station and remodel its present quarters at Marietta, Ohio. E. L. Stephens is local manager.

The Ohio Power Co., Canton, Ohio, will take bids shortly for a two-story garage and service building.

The General Fireproofing Co., Youngstown, is preparing to expend \$200,000 for additional equipment and alterations to its plant on Logan Avenue for the manufacture of metal furniture, steel shelving and other pressed steel products. It plans to utilize the factory space now occupied by the General Fireproofing Building Products, a subsidiary of the Truscon Steel Co., which in 1925 acquired by purchase the fireproofing division of the General Fireproofing Co. The Truscon company is now erecting on Albert Street additional factory facilities to accommodate this acquisition.

The Everhard Mfg. Co., 317 Schroyer Avenue, Canton, Ohio, manufacturer of metal specialties, is building a one- and two-story plant, 100 x 200 ft., of brick and steel construction. H. H. Everhard is general manager.

## Indiana

INDIANAPOLIS, May 10.

**B**IDS will soon be asked by the Indianapolis Light & Heat Co., Monument Circle, Indianapolis, for a one-story addition to its steam-operated electric generating plant, to cost \$500,000 with equipment.

The Fairfield Mfg. Co., Lafayette, Ind., manufacturer of gears, cutters, etc., is considering the construction of a one-story machine shop to cost about \$25,000 with equipment. A. A. Gustafson is general manager.

The Indiana Limestone Co., Bedford, Ind., has been organized with assets of \$40,000,000 to take over and consolidate 24 limestone quarries and plants in the Bedford-Bloomington district of southern Indiana. Plans are under consideration for extensions and improvements and a bond

issue is being arranged to carry out the merger and for expansion. Augustus E. Dickinson, Bedford, president Consolidated Stone Co., one of the units of the consolidation, will act in like capacity with the new company. C. W. Walters, heretofore president Indiana Quarries Co., will be chairman of the board.

The Common Council, Danville, Ind., will soon ask bids for two pumping units and auxiliary equipment for a proposed new station for the water system. R. W. Noland, Lafayette Life Building, Lafayette, Ind., is engineer.

The Roxana Petroleum Corporation, Arcade Building, St. Louis, has begun preliminary work on its proposed new refinery on site lately acquired at East Chicago, Ind., including pipe line construction. The entire project will cost in excess of \$2,500,000.

The Board of Education, Valparaiso, Ind., plans the installation of manual training equipment in its proposed one and two-story high school at Park and Weston Avenues, estimated to cost \$300,000, for which superstructure will soon be placed under way. Perkins, Fellowes & Hamilton, Tower Court, Chicago, are architects.

The Hoosier Desk Co., Jasper, Ind., has awarded a general contract to Seuffert & Olinger, Ferdinand, Ind., for two three-story factory additions, 60 x 200 ft. and 30 x 30 ft., respectively, to cost \$100,000, with equipment. Shopbell, Fowler & Thole, Evansville, Ind., are architects.

The Vacuum Cotton Harvester Co., 1915 Pine Street, St. Louis, manufacturer of cotton-picking and harvesting machinery, has acquired the former factory of the Emerson-Brantingham Co., at Columbus, Ind., and will remodel for a new plant. It is purposed to remove the present St. Louis works to this location and install additional equipment, giving employment to about 100. John S. Thurman is president.

The General Electric Co., Fort Wayne, Ind., has plans under way for the construction of a new industrial service building at its local branch plant in conjunction with a number of miscellaneous buildings, for which bids will soon be asked. The cost is reported at close to \$150,000.

## Milwaukee

MILWAUKEE, May 10.

**C**ONSERVATISM continues to govern the call for machine tools. Inquiry is moderately active, but it is apparent that the metal trades in general are not looking to immediate expansion of facilities that makes for large-lot business in equipment. Tool builders are obtaining a fair quantity of orders in single items, which is sufficient to sustain output at the former rate, and virtually as many men are at work in these shops as a month ago. General employment declined less than 2 per cent during April and the loss is attributable mainly to the textile industry.

The Kemp Smith Mfg. Co., Milwaukee, is completing delivery of an order for milling machines to a large jobber in Johannesburg, South Africa, for distribution among shops in that territory. Domestic business is reported to be fairly active with new business coming from a variety of sources.

Brown County Motors, Inc., 610 Main Street, Green Bay, Wis., rejected bids opened May 1 and opened new bids May 8 for the erection of a \$100,000 automotive sales and service building, 75 x 120 ft., three stories and basement. Purchase of equipment will be made within a short time. The architects are Oppenhamer & Obel, Green Bay and Wausau, Wis.

The Belle City Malleable Iron Co., Racine, Wis., is commencing work on the construction of the second unit of its new foundry, 116 x 203 ft., the general contract having been placed with Nelson & Co., Racine. The project contemplates the entire replacement of the old plant on an enlarged scale at a total cost of \$800,000. The engineers are A. A. Wickland & Co., 5 South Wabash Avenue, Chicago. C. S. Anderson is general manager of the Belle City company.

The Milwaukee Metal Spinning Co. has been incorporated with a capital stock of \$25,000 to succeed a business conducted under the same name for several years by Theodore K. Salow, manufacturer of copper, brass and zinc products, 313-315 East Water Street Milwaukee. There is no change in ownership or management, but plans are being made for a substantial enlargement of capacity.

R. C. Olson has taken over a former shoe factory at Tomahawk, Wis., and is converting it into a building to produce airplane propellers and other parts.

Venus & Werkowski, 1413 Packard Avenue, Cudahy, suburb of Milwaukee, have plans by Rosman & Wierdsma, architects, 490 Broadway, Milwaukee, for a public garage, sales and service building, 50 x 120 ft., part two stories and

basement, and estimated to cost \$35,000. Contracts will be awarded immediately.

The Northfield Co., 1800 Martin Avenue, Sheboygan, Wis., manufacturer of furniture and hardwood specialties, will build a four-story factory addition, 40 x 118 ft., and rebuild the first floor of the present factory, 50 x 108 and 50 x 150 ft., adding considerable new motor-driven machinery. Ernst Schultz is general manager.

The Hamilton Mfg. Co., Two Rivers, Wis., which is erecting a five-story addition, 120 x 130 ft., and a one-story extension, 120 x 150 ft., for manufacturing, storage and shipping, is taking bids on the elevator and conveyor equipment through Lockwood, Greene & Co., engineers, 400 North Michigan Avenue, Chicago. The Hamilton company manufactures wood and metal furniture, fixtures, etc.

Henry Meany, Thirteenth and Franklin Streets, Manitowoc, Wis., has plans by William J. Raeuber, local architect, for the construction of an automotive sales and service building, 60 x 120 ft., part two stories and basement, to cost about \$35,000 with equipment.

## Detroit

DETROIT, May 10.

**C**ONTRACT has been awarded by Dodge Brothers, Inc., 7900 Joseph Campau Avenue, Detroit, to the M. J. Hoffman Construction Co., Evansville, Ind., for a one-story hammer and forge shop at its Hamtramck, Mich., plant, 75 x 400 ft., to cost about \$200,000 with equipment.

The Ann Arbor Home Builders, Inc., Ann Arbor, Mich., recently organized, has purchased a local factory and will establish a plant for the production of ready-cut materials for house construction. Fred P. Cory is president.

Plans are under way for a merger of the Berkey & Gay Furniture Co., the Wallace Furniture Co., and the Grand Rapids Upholstering Co., all of Grand Rapids, Mich., under the first noted name. The new company will be capitalized at \$2,000,000, and will expand the different operating units. Work will soon begin on a six-story addition to the Berkey & Gay plant, 75 x 185 ft., to cost about \$250,000 with equipment.

Bids are being asked on general contract by the Detroit & Michigan Stove Co., 6900 East Jefferson Street, Detroit, for its proposed one-story addition, 75 x 100 ft., to be equipped primarily for enameling service. Charles Kotting, Dime Bank Building, is architect. The company will soon proceed with a one-story pattern shop to cost approximately \$50,000, for which a contract recently was let to the Walbridge-Aldinger Co.

The Board of Education, Alma, Mich., plans the installation of manual training equipment in the proposed two-story addition to the junior high school, estimated to cost \$250,000. Warren, Holmes & Powers, Tussing Building, Lansing, Mich., are architects.

The American Enameled Products Co., 2101 Indiana Avenue, Chicago, has secured the former plant of the Transport Truck Co., Mount Pleasant, Mich., for its proposed new factory at that place. Improvements will be made and the present plant at Chicago will be removed to the new location.

The Board of Education, Royal Oak, Mich., is planning an early call for bids on a general contract for its proposed two and three-story senior high school, with manual training department, estimated to cost \$1,200,000. F. D. Madison, First State Bank Building, Royal Oak, is architect.

The Stickley Brothers Co., Grand Rapids, Mich., manufacturer of furniture, will soon begin the erection of an addition, to cost approximately \$50,000 with equipment.

The Stinson-Detroit Airplane Co., 924 Brook Building, Detroit, has completed plans for a local factory and will soon begin operations.

Barnes-Gibson-Raymond, Inc., 6400 Miller Road, Detroit, manufacturer of steel springs, etc., has awarded a general contract to the Cooper-Widenmann Co., 4612 Woodward Avenue, for a two-story addition, 60 x 160 ft., to cost \$100,000 with equipment. Janke, Venman & Krecke, Broadway Market Building, are architects.

The Municipal Light & Power Bureau, Lansing, Mich., is contemplating the construction of an addition to the city-owned electric light and power plant, to cost approximately \$800,000 with equipment.

R. C. Fogelson, Grand Rapids, Mich., has plans under way for a one-story foundry to cost close to \$45,000 with equipment.

Bonnah & Chaffee, Barium Building, Detroit, architects, have completed plans for a two-story automobile service, repair and garage building, 80 x 200 ft., to cost close to \$85,000 with equipment.

## St. Louis

ST. LOUIS, May 10.

**T**HE Willhelt Refining Co., Springfield, Mo., has begun extensions and improvements in its oil refinery at Joplin, Mo., to include the installation of additional equipment. The work is estimated to cost \$100,000.

The Board of Education, Minatare, Neb., is considering the installation of manual training equipment in its proposed senior and junior high school estimated to cost \$110,000. E. L. Goldsmith & Co., Scottsbluff, Neb., are architects.

The City Council, Rising City, Neb., plans the installation of deep-well pumping machinery in connection with proposed extensions in the municipal waterworks. Grant, Fulton & Letton, 525 South Thirteenth Street, Lincoln, Neb., are consulting engineers.

Hemp & Co., 1939 South Vandeventer Avenue, St. Louis, manufacturers of furnace equipment, etc., have plans for a two-story addition, 80 x 150 ft., to cost approximately \$45,000 with machinery.

The Arkansas-Missouri Power Co., Blytheville, Ark., has commenced the construction of a new ice-manufacturing plant to cost about \$50,000. It will also proceed with the erection of a similar plant at Walnut Ridge, Ark. The ice-manufacturing plant at Monette, Ark., recently damaged by fire will be rebuilt at once and additional equipment installed. J. A. Schindler is superintendent.

The Board of Education, Kansas City, Mo., is considering the installation of manual training equipment in the new four-story and basement addition to be erected at the Southwest high school, Sixty-fifth Street and Wornall Road, estimated to cost \$400,000. Charles A. Smith, Finance Building, is architect.

The City Council, New Madrid, Mo., will install a pumping plant in connection with proposed extensions and improvements in the municipal waterworks, estimated to cost \$65,000.

The Southwest Cotton Oil Co., 1500 East Fourth Street, Oklahoma City, Okla., will erect a one-story plant at 6 East Chickasha Street, 100 x 200 ft., to cost about \$35,000 with equipment.

Sears, Roebuck & Co., Arthington and Homan Streets, Chicago, mail order distributors, are planning the erection of a four-story factory branch and distributing plant at Wichita, Kan., 100 x 275 ft., to cost in excess of \$200,000 with equipment.

The Atchison, Topeka & Santa Fe Railroad Co., Topeka, Kan., contemplates extensions and improvements in its rail mill and frog shops at Newton, Kan., including the installation of additional equipment, reported to cost \$150,000.

The Ford Radio Corporation, 1479 Hodiamont Avenue, St. Louis, has been organized by the directors of the Wellston Radio Corporation and has taken over all of the trade marks, copyrights and patents held by the Wellston Radio Corporation. The Ford corporation will market radio receiving sets, speakers, tubes and other radio apparatus under the trade name Ford. Contracts will be let for the manufacture of all parts of the assembled equipment to be marketed this year. Officers of the Ford Radio Corporation are: F. J. Grenzer, president; S. J. Grenzer, treasurer; and F. J. Williams, secretary.

## Pacific Coast

SAN FRANCISCO, May 5.

**P**LANs are being completed by the Standard Sanitary Mfg. Co., 1000 Brannan Street, San Francisco, for the first unit of its expansion program at the North Richmond, Cal., plant, to be two stories, 135 x 250 ft., estimated to cost \$250,000. Other buildings will be constructed later. Headquarters are in the Bessemer Building, Pittsburgh.

The Southern Sierras Power Co., Riverside, Cal., has plans for an addition to its steam-operated electric power house at San Bernardino, Cal., to cost about \$100,000 with equipment. Work will soon begin.

The Julian Petroleum Co., Pershing Square Building, Los Angeles, has leased 7 acres at the Parr Terminal, Oakland, Cal., as a site for a new storage and distributing plant estimated to cost \$400,000. M. H. Merrill & Co., 1 Drumm Street, San Francisco, are engineers.

The City Water and Power Bureau, 207 South Broadway, Los Angeles, has plans under way for a five-story addition to its automobile service, repair and garage building, 60 x 150 ft., to cost \$185,000 with equipment. L. L. Smith, 833 South Spring Street, is architect.

The Seattle-Astoria Iron Works, Inc., 601 Myrtle Avenue, Seattle, will begin the erection of a one-story addition, 105 x 120 ft., at Seventh and Myrtle Avenues, to cost about \$45,000 with equipment. The Austin Co., is architect.



The Whittier Union High School, Whittier, Cal., has taken bids on a general contract for a new machine shop at the manual training buildings to cost about \$35,000. Herbert Anderson is clerk.

The Metropolitan Garage, Humboldt Bank Building, San Francisco, has completed plans for a six-story service, repair and garage building at East Stockton and North Green Streets, to cost \$130,000.

The Pacific Fruit Express Co., Southern Pacific Building, San Francisco, will soon begin work on additions to its plant at Roseville, Cal., including a new refrigerator car construction and repair shop, ice and precooling plant and other structures, estimated to cost \$1,000,000 with equipment. The company is operated by the Southern Pacific Railroad.

The El Dorado Power Co., San Francisco, is completing plans for the early construction of a hydroelectric generating station on the South Fork of the American River, vicinity of Sacramento, Cal. The plant will be designed to develop a capacity of 24,850 hp., and will cost close to \$3,000,000 including transmission system.

Roberts & O'Keefe, Stockton, Cal., operating a lumber and planing mill, have acquired the local Leases Planing Mill, 600 West Fremont Street, and will consolidate with their plant. Plans are in progress for the construction of a new wood-working plant and planing mill, to cost about \$65,000 with equipment. The two other mills will be removed to this location and additional equipment installed. William O'Keefe is head.

The Echophone Mfg. Co., 924 Pacific-Southwest Bank Building, and with factory at 958 North Formosa Avenue, Los Angeles, Cal., will engage in the manufacture of radio receivers on an extensive scale, but complete plans will not be announced for a few weeks.

## Canada

TORONTO, May 10.

**M**ACHINE tool sales for the month of April fell below those of March, chiefly due to a falling off in demand from the automotive industry. The majority of other industries, however, maintained a strong demand for tools throughout the month and will show but a slight decline. Current business is fairly active and inquiries are reported from many sections of the Dominion, with the bulk confined to single tools. A stronger demand is reported for rebuilt tools and sales of this class of machinery have shown decided improvement since the beginning of the year.

Beatty Brothers, Ltd., Fergus, Ont., manufacturer of electric washing machines, hydrants, etc., has started work on an addition to its plant.

The Romaine River Oxide Co. is contemplating building a plant at Levis, Que., to cost approximately \$1,000,000.

The Bates Valve Bag Co., Ltd., 2800 South Chicago Avenue, Chicago, contemplates the erection of a manufacturing plant at Cap de la Madeleine, Que., to cost \$75,000.

Bids will be called in a few days by R. M. Mitchell, engineer, for the erection of a manufacturing plant at St. Laurent, Que., for the Consolidated Pipe Co., Ltd., Canada Cement Building, Montreal.

The Canadian Salt Co., Sandwich Street West, Windsor, Ont., will start work soon on a proposed factory and office building at Sandwich, Ont.

Lime & Crushed Stone, Ltd., 18 St. James Street, Montreal, are in the market for a No. 7 crusher, 25-ton lime burner and electric motors for a quarry.

It is reported that the P. Lyall & Sons Construction Co., Transportation Building, Montreal, has been awarded contract for steel gates for the Welland Canal. Over 30 gates will be supplied at a cost of approximately \$4,500,000. It is stated that there is still more business of this nature pending, which will probably total \$2,500,000. A subsidiary company to be known as Steel Gates, Ltd., has been formed with a capital stock of \$49,000, all of which is owned and controlled by the Lyall company, in charge of the work. The order immediately in question will call for the awarding of contracts for 20,000 tons of metal, of which 16,000 tons will be steel and 4,000 tons castings. It will require three or four years to complete the work.

### Western Canada

The time for receiving bids for building the traveling crane for the new Esquimalt drydock at Victoria, B. C., for the Dominion government, Department of Public Works, Ottawa,

has been extended to June 2. Plans are with the Department of Public Works, Ottawa.

The Granby Consolidated Mining, Smelting & Power Co. has completed negotiations with the city of Grand Forks, B. C., whereby the latter will take over Smelter Lake and dam, and proposes to build a power plant to develop approximately 1200 hp., at a cost of \$35,000.

Construction work on the first unit of the new plant at New Westminster, B. C., for the Canadian Scottish Paper Co., Ltd., under the supervision of C. F. Robinson, is well under way. The first unit will cost \$12,000 for buildings, and another \$18,000 will be spent on equipment. Two buildings are being erected, the coating mill, 55 x 220 ft., and boiler house, 28 x 40 ft.

## Foreign

**T**HE Swedish Chamber of Commerce of the United States, 25 Beaver Street, New York, has received an inquiry (Ref. 90) from a company in Sweden desiring to get in touch with American manufacturers of machinery for making pegs.

The J. G. White Engineering Corporation, 43 Exchange Place, New York, has taken contracts for its subsidiary, known as the Engineers' Corporation, for the construction of a proposed hydroelectric generating plant in the Valdivia Lake district of Chile, with initial capacity of 35,000 hp. A transmission line will be constructed for service at Valdivia and to Corral, where it is proposed to build an iron and steel plant. The White organization has also secured contracts for the last noted enterprise. Another steel mill, it is understood, will also be built in this section. The projects are sponsored by the Chilean Government and will be carried out through a private corporation, known as the Compania Electro Siderurgica e Industrial de Valdivia, of which Victor M. Navarrete is managing director.

The Ford Motor Co., Detroit, has recently organized a subsidiary to operate in Finland, to be known as the Ford Motor Co. of Finland, capitalized at 20,000,000 Finnish m. The company will establish a plant at Helsingfors, with initial operations to be devoted to assembling.

The International Railways of Central America, 17 Battery Place, New York, is disposing of a note issue of \$3,500,000, the proceeds to be used in connection with the construction of 193 additional miles in Guatemala and Salvador, and for the purchase of necessary equipment. Minor C. Keith is president.

Francisco Sanseverino, Calle Boedo No. 632, Buenos Aires, Argentina, South America, operating a machine shop, has been making inquiries for mechanical and electrical equipment, including cranes, electric motors, etc.

The Acme Construction Co., S. A. I., via delle Brecece, Naples, Italy, is in the market for American machinery for a mill to produce gypsum and building plaster.

Colorado Fuel & Iron Co.'s receipts for the first quarter amounted to \$10,557,454, against \$10,866,067 in the same period last year. Net earnings, however, showed a substantial increase at \$1,985,616, against \$1,436,205. After adjustments for other income, fixed charges, taxes, depreciation, etc., the surplus income was \$1,112,115, compared with \$569,752 in the first quarter of 1925.

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## Financial Notes

The Cleveland Cliffs Iron Co., Cleveland, reports net earnings available for dividends in 1925 to the amount of \$1,691,243, or equivalent to about \$4.23 a share on 400,000 shares of no par value stock, compared with \$862,524 or \$2.15 a share in 1924. After deducting \$1,200,000 in dividends, \$491,243 was transferred to surplus, compared with a deficit of \$337,475 in 1924. An increase in profit and loss surplus of \$10,057,138 arises from 1925 earnings after dividends. President William G. Mather explains in his report, from adjustment of \$9,565,894 in property and equipment, depreciation and depletion reserves and capital surplus, to meet requirements of the United States Treasury Department in connection with the assessment of Federal taxes. The adjustment relates chiefly to property and assets taken over by the Cleveland Cliffs Iron Co. upon dissolution of the Cleveland Iron Mining Co. and the Iron Cliffs Co. in 1914, and from other subsidiary companies acquired between 1912 and 1918. The stocks of these companies were carried on the Cleveland Cliffs' books at their depreciated book value, but the Treasury Department directed that the property of these companies should be set up at its actual value. Mr. Mather stated that prospects for 1926 indicate a somewhat larger net income and, with this in view, the directors increased the quarterly dividend in January from 75c. to \$1 per share.

Income of the Wheeling Steel Corporation for the first quarter, after Federal tax provision, was \$2,374,878. Deduction for depreciation, depletion and interest leaves a net profit of \$1,079,614, compared with \$847,795 last year. Dividend at 2 per cent on preferred A stock and 2½ per cent on preferred B stock took \$663,276, leaving the quarter's addition to surplus at \$416,338. This made total surplus, March 31, \$8,206,175, compared with \$5,956,934 a year ago.

Gulf States Steel Co. reports net income for the first quarter of \$256,635, after Federal taxes and depreciation. This is equal to \$1.79 per share on common stock and compares with \$2.89 in the first quarter, 1925. The earnings made the smallest first quarter's total in several years.

Union Carbide & Carbon Corporation reports net income for the first quarter of \$5,781,995 after depreciation, interest and Federal taxes. This is equivalent to \$2.17 a share on 2,659,733 shares of stock outstanding, and compares with \$1.60 per share in the first quarter of 1925.

Midland Steel Products Co. reports net income of \$768,094 for the first quarter, after interest and depreciation. This is equivalent to \$6.34 a share on the 8 per cent participating preferred stock and to \$3.10 a share on the 50,000 shares of common stock. It compares with \$7.04 and \$2.84 respectively in the first quarter of 1925.

Replogle Steel Co. reports net income of \$100,481 in the first quarter, equivalent to 20c. a share on 500,000 shares of stock outstanding. This compares with 4c. a year ago. The consolidated balance sheet on March 31 shows current assets of \$4,327,670 and current liabilities \$435,375, leaving net working capital of \$3,892,295, compared with \$3,215,718 a year ago.

Inland Steel Co. reports earnings from operations in the first quarter at \$2,441,630. Depreciation, depletion, interest and estimated Federal taxes reduced this amount to \$1,540,909 as net profits for the quarter. Preferred dividend of 1½ per cent becomes payable July 1, and common dividend of 62½c. per share is payable June 1. Earnings per share on the common stock during the quarter were \$1.16, compared with 72c. in the first quarter of 1925.

The Superior Steel Corporation had a net profit of \$151,987 after all charges in the first quarter of this year, equal to almost \$1.52 per share on its outstanding capital. In the last quarter of 1925, net profits were \$95,481, and on the strength of the showing of these periods the management has resumed dividends with a declaration of 50c. per share, payable June 1, to stockholders of record May 15.

Net earnings of the Crucible Steel Co. of America during the six months ended March 31 are reported to have been \$3,200,712, compared with \$2,831,494 in the preceding six months, with \$1,874,000 in the six months ended March 31, 1925, and with \$1,596,999 in the six months preceding that. Unfilled orders on the books of the company at various recent dates are as follows:

Aug. 31, 1924 .....	49,252 tons
Feb. 28, 1925 .....	140,446 "
Aug. 31, 1925 .....	144,161 "
Dec. 31, 1925 .....	153,025 "
Mar. 31, 1926 .....	141,260 "

## THE LAST WORD

"WE know very nearly exactly what our sales will be next month, and, in fact, for the next six months," the assistant to the president of one of the largest companies in the metal trades said to me the other day. "And, moreover," he continued, "we know in what sections of the country our business will increase and where it will fall back."

I was properly mystified, so he kindly explained that black magic had no part in it and that it was simply a matter of his company's having a research man who, in the vernacular, knows his vegetables.

For the past several years this particular sales forecaster has never been more than two per cent off in predicting the volume of business. It takes a great deal of the romance and interest out of business to know in advance what your sales are going to be, but that is compensated for by increased profits due to greater coordination in buying, manufacturing, selling and financing.

If you are especially interested in sales forecasting, you will find an excellent article on the subject beginning on page 19 of THE IRON AGE of Jan. 27, 1926, and another on page 691 of the March 11 issue.

*Free gratis; no charge.* If the possibilities of steel-frame dwellings appeal to you, just take advantage of your privileges as a reader and ask for the booklet, "The Dwellings of Tomorrow." It contains in full the six articles which appeared in THE IRON AGE.

*Pity the poor purchasing agent.* Thirty salesmen per day call on the average purchasing agent, says an official of the P.A.'s association. Let's see now; if a call takes fifteen minutes, that would mean seven and one-half hours per day spent with salesmen, which leaves the P.A. thirty minutes a day in which to do his own work. Something is wrong somewhere; perhaps in my calculations.

A far from soothing thought is that there is no relief in sight, for the aforementioned official of the purchasing agents' association declares *salesmen's calls are increasing at the rate of 20 per cent per year.*

*A few years ago an advertising agency wanted to know if you and the other multitudinous readers of this organ of industry ever condescended to honor the advertising section with your attention.*

*"Yes, sir," we chorused loudly, "every reader reads the advertising." But this was a peculiar agency and an inquisitive one. It said, "You may be right, but we will find out for ourselves."*

*So we allowed it to send out a questionnaire to all our subscribers in a certain State. The outcome of the investigation was eminently satisfactory to ALMOST all concerned. We got the advertising contract; the agency's belief in our veracity was firmly established; but we found out to our surprise that some people were taking the paper solely for the advertising. That's what they told the agency.*

*Of course, this does not go far toward enthusing an editor. Yet he says the fact makes for a healthy paper; also that an advertising fan is not beyond reform.*

People who write the advertising apparently do not realize the delicacy of the situation, for the advertising is steadily becoming more interesting. The old question, "Will the advertising be read?", answers itself with, "Yes, if it be worth reading."

If all the advertising in THE IRON AGE is made as interesting as some of it, Thursday is going to be a pretty crowded day for those in the industry east of the Mississippi.

A. H. D.